



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>





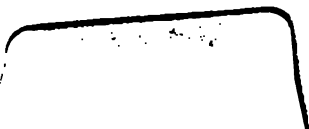
600030971Q

Det. from Army

C

1978!

e. 121





A 77

TREATISE
OF
FRUIT-TREES.

By THOMAS HITT,
GARDENER to the Right Honourable Lord
ROBERT MANNERS, at Bloxholme,
in Lincolnshire.

The SECOND EDITION.



L O N D O N:
Printed for the AUTHOR;
And Sold by T. OSBORNE and J. SHIPTON,
in Gray's-Inn; and J. RICHARDSON,
in Pater-Noster-Row.
MDCCLVII.

P R E F A C E.

I AM apprehensive this treatise will meet with the fate of many others; that is, of being despised by some readers: for which reason, I think it necessary to make an apology, which, I hope, will obtain for it a more favourable reception than it might otherwise meet with.

AND let me excuse myself to my Brother-Gardeners, those who are well acquainted with the nature of Fruit-trees, lest they should think me like that celebrated prize-fighter who was always ready to take up a weapon against any person that durst encounter with him; but I do not presume to act in this manner, nor did I write with these vain expectations of being instructive to all Gardeners; and yet, I am hopeful, it will be of service to such young ones as are desirous to improve themselves. This publication was occasioned and promoted by several gentlemen who like to spend some time in their gardens, and would gladly be enabled to judge if their Fruit-trees are properly pruned, or not; many of them declared to me that

they thought the employment extremely pleasant in temperate weather, and should like to do many things themselves, could they be certain their labour would be properly applied. I, indeed, thought my school-education too narrow for such an undertaking, but my friends persuaded me, that polite expressions were not expected in such a performance; and therefore, I flatter myself its rude stile will be excused by the learned reader.

I HAVE shewn by copper-plates the shapes that I train the several sorts of Fruit-trees to; and have likewise given rules for the doing of it. Some of my words were changed by the Corrector of the Press, for others he thought more clear and proper: but I have carefully examined every sheet, in time of printing, and declare, that my methods of ordering Fruit-trees are justly published, without either reserve or addition, which was the thing desired by my friends, who must know what success hath attended my practice.

I HAVE not given any account what climate the several kinds of fruits were originally brought from; for that is known to the learned, and is not wanted by others.

IN

IN the description of fruits, I have omitted most of their foreign names, and only mentioned those they are most commonly called, and are best known by in England; and, as to their time of ripening, that is adapted to the present stile, as is likewise all other parts of the work relating to time.

THE catalogue of fruits is not indeed so large as some others; but it contains a sufficient number of good sorts for any small garden. The descriptions of their shapes, colours, &c. I have not copied from other authors, but drawn them faithfully from the several fruits in perfection.

ALMOST all the sorts are now under my care, at Bloxholme in Lincolnshire, the seat of the right honourable lord Robert Manners: and at Belvoir-Castle, there was in the time of my apprenticeship at that place, a greater number of good sorts than those I have mentioned; the greatest part of them having been sent from abroad by the right honourable the earl of Stair to his late grace the duke of Rutland, and improved by his present grace, by adding other new and good sorts, when they were to be met with. The greatest part of my time I have had the honour to be a servant

me to this undertaking, I had subscriptions from many noblemen, gentlemen and ladies: and now I return every one my most humble thanks for the honour they did me. I am convinced my labour will be of service to those who follow all the rules; but it must not be expected that old trees will bear more fruit the first year after pruning than they did before; an improvement, however, may be visible to any curious and impartial observer. Though the young wood procured by proper pruning will bear the first year in many kinds of trees; yet in others it will not till it be two or three years old, as I have mentioned in the rules for pruning.

NEITHER can a tree be much helped by mere cutting, unless the roots and borders in which they grow be used as directed; which work I am afraid will be neglected by several practitioners, who despise books, and take a pleasure in rendering them useless to others; but there are many young men who love to read for the sake of improvement, and to such, I hope this work will be serviceable.

And young men, with the nature of plants, and ordering them. To encourage

W. H. H. 1

A
T R E A T I S E
O F
F R U I T - T R E E S .

C H A P . I .

O B S E R V A T I O N S on SOILS proper for
F R U I T - T R E E S .

WHAT I shall advance concerning
soils proper for fruit-trees is not
a bare hypothesis, but founded
on various experiments I have made, both
upon old and new planted trees, with good
success.

The soils in which I have found most
kinds of fruit-trees to thrive and bear
best, are either of a red, black, brown,
or grey colour, of a strong nature, more
inclining to clay than sand, to the depth
of two feet; if more, not the worse; not

B

having

having either a sharp sand or springs beneath, but either a rock, marle, or a strong clay, if it be tolerable dry.

The solid particles of clay are the smallest of any sort of soil: so that in clay there is much matter and but little space. It retains moisture longer than sand, whose solid parts are much larger, as well as the spaces betwixt them: through which too great a quantity of the saline juices quickly descend, and the lightest parts of them are easily attracted by the sun's rays, by which in the summer the surface becomes too soon dry. Clay, though it retains moisture longer, yet when 'tis very dry is so compact a body, that neither rain nor watering can easily penetrate it, but remain upon or near the surface in summer till attracted by the sun, or carried off by the winds, and but little descends to the roots of vegetables: nor can the roots extend themselves so easily in clay, as in soils more open and porous. Therefore, as sand gives room for the roots to extend themselves, and clay retains proper juices for them to absorb, a mixture is better than either of them alone.

Any

Any soil too wet is improper for fruit-trees, whether they are planted against walls, or are espaliers, dwarfs, or standards. Cherry-trees are often killed by it, and apples, pears, &c. are covered with moss, the extreme parts of their branches are cankered and die, and the fruit, if they bear any, is small and ill tasted. Peaches, nectarines, and apricots, are very much hurt by it, and the trees if they live produce a spongy wood subject to blights, and unhealthy, and the fruit, if any, are insipid. Vines and figs require a drier soil than any of these before mentioned; and I shall in another place shew how to prepare it.

C H A P. II.

Draining of Soils.

CLAY, or any wet soil, may be improved by draining; in order to which, for wall-trees, trenches may be made, about half a yard wide at the bottom, and one foot deeper than the borders are made, close by the edge of the walks adjoining; these

4. A TREATISE OF

trenches being filled up within about half a yard of the top of the border, with either small stones, pieces of bricks, faggots of black thorns, broom, or ling, &c. and covered with earth even with the other part of the border, will be a means to keep it dry.

I have seen trenches made close by the walls, in order to drain land, but they answered not the end; for they were not of a sufficient depth, neither could they be made deeper, without weakening the foundation: and as these trenches were so shallow, the roots of the trees are apt to strike into them, which, being in winter generally filled with a sharp running, and at other times in some parts with a cold stagnant water (their bottoms not being made with a due descent) greatly injured the trees, and sometimes killed them,

For, having an opportunity of seeing a tree that was dead, where these trenches were made, I examined the roots, and found the extreme parts of them covered with sharp sand; from whence I concluded, that the aforesaid waters occasioned its death.

To

To prevent water from standing in the trenches or drains, they ought to be made with as much descent as possible towards that part of the ground which is lowest: and if a garden be walled in and levelled, before this is thought on, the lands on the *out-side* must be examined, to find which is lowest, and if there be any common water-course, the drains must point towards it, and if the garden be not levelled, it must be so laid out as to be above it, otherwise the drains will be of no service.

In gardens, upon land of this sort, it will be proper to have several of the first mentioned drains, whether they are pleasure grounds, kitchen gardens, or orchards; for all lands that are very wet in the winter, are not fit to walk upon, neither for pleasure nor business; besides they lose much of their saline juices; and if they be clay, are subject (if the season is dry in the spring) to set very hard, whereby the ground becomes unfit for the reception of seeds and plants.

After land is drained in the manner before directed, at the time of making the

borders, either for wall-trees, dwarfs, or espaliers, a mixture of earth ought to be made for them, no less than two feet deep,

C H A P. III.

Making of Borders for Peaches, Nectarines,
Pears, Plums, Cherries, &c.

IF the land be a strong clay, take sea sand, if it may be easily had, if not, any other sand that is nearest, and about one sixth of the quantity of coal ashes, that have been kept very dry; riddle them, but not too fine: for if some of the larger parts be left, they will disunite the tough body of clay, and make it more open and tender, and the finer parts that are more burnt will add more salts to it.

But if ashes cannot be had, take about a twelfth part as much lime as sand. About a third part of the depth of the borders ought to be of these ingredients; and in trenching the borders, there must be a layer of these, and a layer of the natural soil, from the bottom to their surface, in the above proportion; but they ought to
be

be turned over twice at least before planting, in order to mix them the better.

If the soil of borders is mixt with large pebbles, they must be picked out, and may be of use (though otherwise hurtful) to lay in the drains.

And as this kind of land is generally of a loose sandy nature, it must be mixt with something more strong and binding, which is clay, the toughest that can be got, and nearest. If it be taken from the sides of ditches, whose soil is naturally a clay, or from ditches in which there is sometimes a current of water falling from tillage fields of that kind of soil, and there leaves its sediment, it will be as good as any.

At the bottom of the borders lay this clay six inches thick throughout, it will prevent the moisture from running off too fast in the summer, as it is apt to do from open sandy ground, especially where there are drains made as before directed; then to each cart-load of clay add three pecks of pigeon dung, or lime, or five of foot, and mix them with a quantity of the natural soil equal to half of them: if coal or wood ashes are made use of instead of

3 A TREATISE OF

foot, they must be made very fine, otherwise they will open this sort of land too much; besides, the finer they are made, the more salts they add to it.

But where sandy lands are dry, the draining part must be omitted; and the other ingredients only are to be made use of.

It may be said, that trees will grow well upon sandy land, without any improvement: I grant they will: but they are not so long lived, being more subject to blights, and the fruit is both smaller, and of a worse taste, than those upon stronger ground inclining to clay.

If land designed for a garden is either hard rock or creach, and lies within the depth which the borders ought to be, let it be picked up and skreened to take out the stones; which will be of service when laid under grass or gravel walks; as they will be drier and less subject to worm sprouts. Then as you find the land, after skreening, either light or strong, add to it one of the mixtures which you see it wants, according to the former directions, to bring it to a proper depth, and a soil more inclining
to

to clay than sand, with a covering of strong clay at the bottom six inches thick.

If the land be fresh and proper for fruit-trees, yet it ought to be trenched as deep as others; and if towards the top there be used a small quantity of the ingredients mentioned before for the enriching of soils, it will be of good service; for it must be noted, that in making the trenches, the worst part of the soil will be uppermost.

If borders are to be planted with trees where others have grown before, the depth and quality of the soil must be examined, and if it be deep enough, and of a proper mixture of sand and clay, then it only requires trenching with the former addition of lime or foot, &c. which will be a better border than if the cold earth had been taken out, and fresh laid in without lime, &c. and also much cheaper.

In borders thus prepared to six feet wide or more (though 'tis proper to make the borders as wide as the walls are high) I have known all kinds of fruit-trees prosper well and bear excellent fruit, except vines and figs.

C H A P. IV.

On making of Borders for Vines and Figs.

THOUGH vines and figs will grow well on those borders before mentioned, yet their fruit is not so good as on those growing in a drier soil.

For at Belvoir castle, a seat belonging to his Grace the Duke of Rutland, there was a vine which bore a white mascadine grape, growing out of the stony foundation of a wall, without any other roots than what were fixt therein (for the border was taken away from the same wall in a sloping manner many years before I saw it) and this vine produced better fruit, and earlier ripe, than any other of the same kind in these gardens, except those planted against the stove walls. Fig-trees (as I have experienced) prosper and bear best when planted in a dry soil, with a rock near the surface.

Therefore in trenching the borders for vines or fig-trees, the natural soil may be mixt with rubbish, as lime scraps, small
pieces

FRUIT-TREES. 11

pieces of bricks, &c. for a foot deep in the bottom, or more; but if the land be of a creachy sort, the lime scraps, pieces of bricks, &c. need not be used, but may be trenched with only the same quantity of foot, &c. added as in others.

In trenching of all borders, the roots of corn-bind, common thistle, and all other weeds whose roots strike deep into the earth, must be carefully pickt out; but the roots of couch-grass, &c. which float near the surface, may be buried in the bottom of the trenches, which will destroy them without any further trouble.

When these or any borders are first made, they should be raised three or four inches higher than the height they are designed to be afterwards; for, in a year's time, they will settle so many inches or more; and those that are ten feet broad, let them lie descending from the wall six inches, and others in proportion to their breadth.

Note, where borders are made for vines only, four feet will be broad enough.

In some situations there is a white earth called marle, which has the same effect as foot, but must be used in larger quantities;
this

this earth is very fine and soft, and if mixt with water has a salt taste.

If the former ingredients cannot be easily procured, then burnt clay may be used in a double quantity to that required of ashes; and mixt with the earth, for borders, as other manures.

CHAP. V.

Of Burning of Clay for the Improvement of Land.

THE turf must be taken off from a piece of clay-ground, about two inches thick, with a breast-plough, and be reared up or turned till dry, then laid in heaps with faggots of furz or ling under them, in order to burn them; when they are red through with fire, throw upon each heap a barrow full of earth taken from ant-hills, pond-banks, or any other place where it may be best spared. Sometimes it happens that the clay laid on the fires is burnt into lumps, in such case it must be beaten very small with flails before it is used in borders.

Per-

Perhaps it may be thought by some, that taking off the turf and burning it will spoil much land; but the quantity pared will only be about twice as much as the borders contain; and for the reparation of the land thus pared, there may be taken from the places where the fires were made the depth of two inches of earth, which, with a small part of the ashes spread over the other parts of the ground, will make amends for the loss of turf; and if it is ploughed and sown with corn or turnips, and, after the crops are taken off, it be laid down with proper grass seeds, it will not be worse for meadow, or pasturing, than it was before paring.

'Tis manifest that fire has a wonderful effect upon land; for when it is burnt, by way of improvement, either to sow with corn, rape-feed, or turnips, if all the ashes be clean taken away, and part of the earth, from the places where the fires were made, yet these places may be easily distinguished, by the crops growing much stronger upon them, and are of a darker green than the other parts, where the ashes were spread; which shews that these places are more fertile than the rest of the ground; and therefore

fore 'tis plain, that land is improved by fire only, without the ashes made of the turf.

C H A P. VI.

Shewing the different effects of Dung, fresh Earth, and Salts, used in Borders for Fruit-Trees, and other Places.

I Doubt not but that it will be said by many, that fresh earth, and rotten manure, are both cheaper and better for fruit-trees than what I recommend; but every reasonable person will acknowledge, that the carriage of earth for the whole border will exceed the expence of the mixtures I have advised: and whoever observes the effect of both, will find the fresh earth and rotten dung not so good for fruit-trees as the other; especially for peaches and nectarines; tho' they will make shoots as large or larger, yet not such healthy ones, nor such as will bear so early; for, being fed from soils too watery (as this generally is) their upper parts are very porous, which the honey-dew adheres closely to, and either kills or damages those parts that would
other=

otherwise have blossomed the next spring; and the lower parts of the branches have very long joints, and but few buds; and those there are of a shape too flat for blossoming.

But when trees grow in a dry soil (mixt as before directed) their young branches will be found healthy at their upper ends, with such buds as are of a sort fit for blossoming; and the lower parts will be able to convey sap from the roots to support them.

The quantity of lime, ashes, foot, &c. must not be greater than what I have mentioned; for as they are serviceable to vegetables when used in a proper quantity, so are they likewise destructive when used in too large a quantity, or when they are not well mixt with moist earth to dilute their salts, and bring them to a fit texture for the roots of trees to receive, without cutting or renting their pores, which they will do if applied too grossly, either to the roots, leaves, or branches; for the salts in those ingredients have angular particles, (even like very severe frost) which renders the vessels of plants incapable of retaining
juice

juices proper for their nourishment; for want of which many plants die, and then 'tis thought that such salt manures are too hot: but it may with as good reason be imagined that frost is too hot, for both are destructive in the same manner, i. e. by cutting and lacerating the vessels.

To shew an acquaintance of mine the effects and advantages of salt properly applied to vegetables, I made the following experiment, in an extreme dry summer, upon a bare piece of pasture land, out of which the cattle were all taken for want of grass. I markt four places with stakes, each of which I watered nine nights successively in the following manner: the first with spring water alone, to the quantity of a gallon; the second with the same quantity of water, adding an ounce of common salt; the third and fourth with the same quantity, mixing the water in the third place with two ounces of salt; and that in the fourth with three ounces, which produced the following different effects.

The grass in the second place grew more, and of a darker green, than that in

the first; in the third it only grew by spots, for part of it was killed where the greatest quantity of water fell; and the fourth was quite brown for a greater compass than the third: by which it appeared, that an ounce of salt in a gallon of water had a better effect than the water had alone; and that three ounces of salt mixt with a gallon of water was more than the grass could immediately receive; but the fourth place in the ensuing spring was the most fertile of them all, which was owing to the winter's moisture diluting the salts.

I shewed him also in the same dry season, a heap of ashes where weeds had some small time before been burnt, which was much moister in a morning by the dews than the soil near it, and continued so longer in the day: upon which he thought and declared, that ashes were neither hot nor dry, but of qualities quite contrary; and that salt was of great service to land, how dry soever, as appeared by the common salt and water used as before mentioned.

If what I have advanced with regard to salts, &c. appears not reasonable to some
C persons,

18 A - TREATISE OF

persons, I shall not contend with them, but leave them to their own opinions; only desire, that they will inform me of what service the fresh earth is to trees, any farther than by the salts therein contained, which it has at various times received from the excrements of cattle long pasturing upon its surface, the saline particles of which, descending to the roots of the grass, render the earth more fertile, and for that reason is frequently made choice of for fruit-trees.

It has been evidently proved by Dr. Keil, that the growth of a tree very little lessens the weight of the earth in which it grew; which difference of weight is purely owing to the greater quantity of salts contained in the earth when the tree was planted, than at the time of taking it up.

For admit the tree be taken up and burnt to charcoal (in doing which a great part of its watery particles evaporate, and some of the finest saline parts) and the charcoal burnt to ashes, in the ashes there will be contained a large quantity of salts, which may be made apparent by pouring water upon them, draining it from them, and

and then boiling it to lessen the quantity ; after which the salt may be easily discovered by its taste, and if it be separated from the water and reduced to powder, its weight will not be much less than the difference between the weight of the earth when the tree was planted, and the weight thereof when it was taken up. But some difference must be reasonably expected ; for there is a salt found in foot, and consequently part of its weight is carried off by smoke, whose heaviest parts form that body, and the lightest are more watery ; so that, after the plant is burnt and consumed in manner aforesaid, there are no marks of earth remaining.

C H A P. VII.

Of the several sorts of Fruit-Trees designed for each Wall, in the 1st Plate.

IF the walls are twelve feet high, there are spaces allowed for the several kinds of trees, proportionable to their natural growth. That is, for a pear-tree grafted upon a free stock (or pear stock) to have 200 superficial feet of walling.

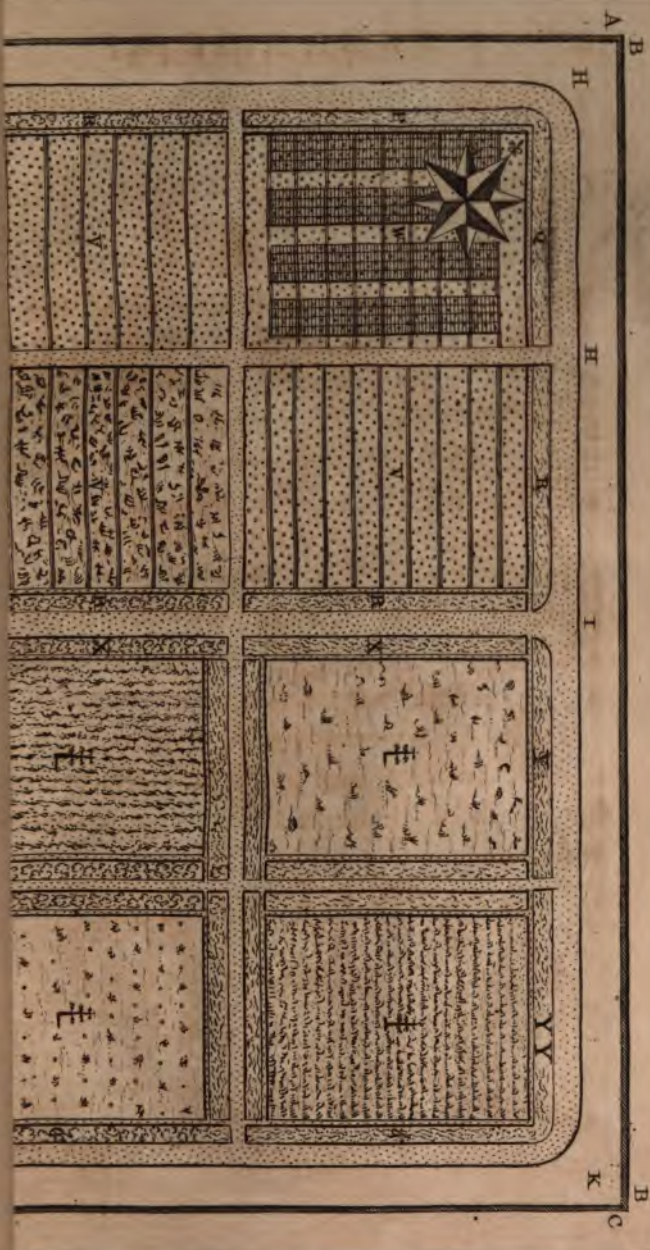
A pear on a quince stock, an apple on a paradise stock, an apricot, an almond, a plum, or cherry of the strongest kinds, a mulberry, and a fig, to have each of them 150 superficial feet of walling.

A peach, a nectarine, a morello cherry, the barran dam, and small May cherry, to have each of them 120 feet of superficial walling.

The wall A A, a south-east aspect.

From E to F.

1. Masculine apricot.
2. White sweet water grape.
3. Bruxels apricot.
4. White sweet water grape.
5. Orange



FRUIT-TREES.

21

5. Orange apricot.
6. Black sweet water grape.
7. Orange apricot.
8. Black sweet water grape.
9. Orange apricot.
10. White frontiniac grape.
11. Turkey apricot.
12. Blue frontiniac grape.

From F to G.

13. Fairchild's early nectarine.
14. Brick grape.
15. Violet hative nectarine.
16. Raisin grape.
17. Elrouge nectarine.
18. Black Hamburgh grape.
19. Italian nectarine.
20. Red Hamburgh grape.
21. Temple's nectarine.
22. Black Spanish grape.
23. Newington nectarine.
24. Black frontiniac grape.
25. Roman nectarine.
26. Black frontiniac grape.
27. Peterborough nectarine.

C 3

From

From G to H.

28. Catharine peach.
29. Black frontiniac grape.
30. Perfique peach.
31. Black frontiniac grape.
32. Rombullion peach.
33. Black frontiniac grape.
34. Hamburgh peach.
35. Black frontiniac grape.
36. The royal peach.
37. The mealy grape.
38. The large violet peach.
39. The mealy grape.
40. The purpree, or purple peach.
41. The mealy grape.
42. The admirable peach.
43. The mealy grape.
44. The nobleſs peach.
45. White muscadine grape.
46. Old Newington peach.
47. White muscadine grape.
48. Old Newington peach.
49. White muscadine grape.
50. Old Newington peach.
51. White muscadine grape.
52. Minion peach.
53. White muscadine grape.
54. Mon-

FRUIT-TREES. A 23

54. Montabon peach.
55. White muscadine grape.
56. Chancellor's peach.
57. Currant cluster grape.
58. The Portugal peach.
59. Currant cluster grape.

The wall B B, a south-west aspect.

From H to H.

60. Italian peach.
61. Currant cluster grape.
62. Early Newington peach.
63. Currant cluster grape.
64. Early Newington.
65. Currant cluster grape.
66. Royal George peach.
67. Currant cluster grape.
68. Red Magdalen peach.
69. July grape.
70. White Magdalen peach.

From H to I.

- | | |
|-------------------|------------------------------|
| 71. Brown buree | } pears on
quince stocks. |
| 72. Cressan | |
| 73. St. Germain's | |
| 74. Marquis | |
| 75. Virgole | |

C 4

From

From I to K.

- | | | | |
|-----|------------------------------|-------------------------------|-----------------|
| 76. | } Colmar's | } pears
on free
stocks. | |
| 77. | | | |
| 78. | | | Winter rouselet |
| 79. | | | Bergamot huge |
| 80. | | | Easter bergamot |
| 81. | } Winter Bonchretien | | |
| 82. | | | |
| 83. | Chamontel on a quince stock. | | |

The wall C C, a north-west aspect.

From K to K.

- | | | |
|-----|-----------------------|-----------------------------------|
| 84. | } Morello cherries. | |
| 85. | | |
| 86. | | |
| 87. | | |
| 88. | | |
| 89. | } Late duke cherries. | |
| 90. | | |
| 91. | | |
| 92. | A black mulberry. | |
| 93. | Le Befi d'Hery | } baking pears on
free stocks. |
| 94. | Cadillac | |
| 95. | } Magnum bonum plums. | |
| 96. | | |

From

FRUIT-TREES.

25

From L to M.

- | | | | | | | |
|------|---|---------------------------------------|---|--------|-------|------------|
| 97. | } | Green damascene | } | Plums. | | |
| 98. | | | | | | |
| 99. | } | Imperial | | | | |
| 100. | | | | | | |
| 101. | } | Orleans | | | | |
| 102. | | | | | | |
| 103. | } | Fotheringhay | | | | |
| 104. | | | | | | |
| 105. | } | The large white
with a short stalk | | | | |
| 106. | | | | | | |
| 106. | } | Marseilles | | | Figs. | |
| 107. | | | | | | Genoa |
| 108. | | | | | | Vernisique |

The wall D D, a north-east aspect.

From M to N.

- | | | | | |
|------|---|-----------------|--------|----------------|
| 109. | } | Hanover | Figs. | |
| 110. | | | | Cyprian |
| 111. | } | Précoc de Tours | Plums. | |
| 112. | | | | Drap d'or |
| 113. | | | | Italian damask |
| 114. | | | | La royal |
| 115. | | | | Green gauge |
| 116. | | | | Blue perdrigon |
| 117. | | | | Verdoc |
| 118. | | | | Maitre Claude |

From

26 A TREATISE OF

From O to E.

- | | | |
|------------------------------------------|---|-----------|
| 119. Rein Claude | } | Plums. |
| 120. Red Spanish damask | | |
| 121. St. Julian | | |
| 122. St. Catherine | | |
| 123. Imperatrice | } | Cherries. |
| 124. Petit muscat pear on a quince stock | | |
| 125. Small May | | |
| 126. May duke | | |
| 127. Harrison's duke | | |
| 128. Carnation | | |

The number of trees against each wall.

The Wall	AA	Apricots.	Cherries.	Figs.	Mulber.	Nectarines.	Peaches.	Pears.	Plums.	Vines
AA		6				8	16			29
BB							6	13		5
CC			8	4	1			2	10	
DD			4	2				1	13	
		6	12	6	1	8	22	16	23	34

CHAP.

C H A P. VIII.

Of the Fruit-trees designed for Espaliers.
round the quarters.

ON the borders P and Q, I do not propose any espaliers ; for the quarter W is intended for a melon ground ; and ought to be well sheltered, either by a wall, or reed hedge.

The borders marked R to be planted with apple-trees upon paradise stocks, at 14 feet apart, of the following kinds :

- 1 The Margaret apple.
- 1 The summer scarlet pearmain.
- 6 Golden pippins.
- 1 The drap d'or.
- 1 Kirton or crackt pippin.
- 2 Aromatick ruffets.
- 1 Wheeler's ruffet.
- 2 Royal ruffets.
- 1 French or grey rennet.
- 6 Nonpareils.
- 1 Red calvil.
- 1 L'Api.

28 A T R E A T I S E O F

The borders marked S to be planted with pear-trees upon quince stocks at 14 feet apart.

- 1 Petit muscat,
- 1 Muscat Robert.
- 1 Citron de Camus.
- 1 Early rouſelet.
- 1 Jargonelle.
- 1 Roſe pear.
- 1 Roſe water.
- 1 Summer bergamy.
- 2 Royal Orange bergamies.
- 1 De Robin.
- 1 Musk'd Bon Chretien.
- 1 La Caſſiolette.
- 1 Summer Bon Chretien.
- 1 La Brute Bonne.
- 1 La Poir de mon Dieu.
- 1 Diene, or the dean's pear.
- 1 Red Buree.
- 3 Autumn bergamies.
- 3 Grey burees.
- 1 L'Epine d'Hyver.
- 1 Ambret.
- 2 Creſſan's.
- 2 Marquis.
- 2 Winter Burees.

FRUIT-TREES.

29

The borders marked T to be planted with cherries, at 14 feet apart.

- 4 May dukes.
- 4 Kentishes.
- 2 Luke wards,
- 2 Black caroons.
- 1 White heart.
- 1 Black heart.
- 2 Barran dams.
- 2 Late dukes.

18

The Borders UU to be planted with vines, at 8 feet apart.

- 4 White sweet waters.
- 4 White muscadines.
- 4 Currant clusters.

12

As the quarters V V V are designed for asparagus, and artichokes, there are no borders proposed round them, by reason fruit-trees would be too much shaded.

The border marked X to be planted with plum-trees, at 14 feet apart.

- 6 Green gauges.
- 2 Queen mothers.
- 2 Orleans.

10

30 A T R E A T I S E O F

The border Y to be planted with 5 cornelian cherry-trees, at 10 feet apart.

The border YY to be planted with fig-trees, at 14 feet apart.

2 Dwarfs.

1 Minion.

1 Marfeilles.

—
4

The border Z to be planted with 5 black mulberries, at 14 feet apart.

The border marked &c. to be planted with filberds and large nuts, at 14 feet apart, 21 in number.

The other borders that are not marked, to be planted with currants, and gooseberries, at 10 feet apart: they will contain about 140 in number.

12 Trees at the centers of the quarters are designed:

4 Almonds.

4 Medlars.

4 Quinces.

The whole number of trees round the quarters are as below:

24 Apples.

23 Cherries.

4 Figs.

5 Mul-

- 5 Mulberries.
- 32 Pears.
- 10 Plums.
- 12 Vines.
- 140 Currants and Gooseberries.

In the quarters.

- 4 Almonds.
- 4 Medlars.
- 4 Quinces.

CHAP. IX.

Of Fruit-Trees proper for Walls that have different Aspects from those in the Plan.

AN infinite number of aspects may be imagined: but I don't think it material to make any alteration in the kinds of fruit-trees, for those aspects that are in the same quarter.

For any aspect from east to south, the same kinds of trees are proper as are adapted for the wall AA, which has a south-east aspect.

From south to west, the same as for the wall BB, which has a south-west aspect.

32 A T R E A T I S E O F

From west to north, the same as for the wall CC, which has a north-west aspect : and for any one betwixt north and east, the same as for the wall DD, whose aspect is north-east.

C H A P. X.

Of Aspects, and Situations, proper for Fruit-Trees, and a Kitchen-Garden.

WHERE ground designed for a garden is not already limited, there may be an opportunity of chusing aspects. As to the figure of a garden, I think none is more proper than a geometrical square, or an oblong, set out in such a manner, that each wall may have as much benefit of the sun as possible.

I have, in plate the first, given a plan of a small kitchen-garden, containing only two acres, with a chart affixed, by which the aspect of each wall is demonstrated ; and if such a situation may be had, it would be proper to lay out the ground descending from the south-west side, i. e. from A to C in the plan, by which means several vegetables

getables will come to maturity sooner than those that are set or sowed in ground quite flat, or descending any other way.

It appears by the meridian line, that the sun's rays continue no longer upon the wall A than three in the afternoon, which I think is the most proper aspect for grapes, peaches, nectarines, and all other kinds of fruit that require the most regular heat to bring them to perfection, and soonest to maturity; for though the sun leaves this wall, i. e. A, so soon in the afternoon, yet in the morning this aspect will be of advantage to the trees and fruit; for (as apricots, peaches, nectarines, blossom early in the spring, at which time our climate is frequently attended with frosty nights, destructive of both blossoms and fruit) the sun's rays darting in lines at right angles upon the wall at nine o'clock, dissolve the congealed moisture much sooner, than if they darted upon it at right angles at noon, which they must consequently do, if the wall stands due south.

'Tis true a south wall will receive more sun by three hours, that is, from about three in the afternoon till near six, (in the

D vernal

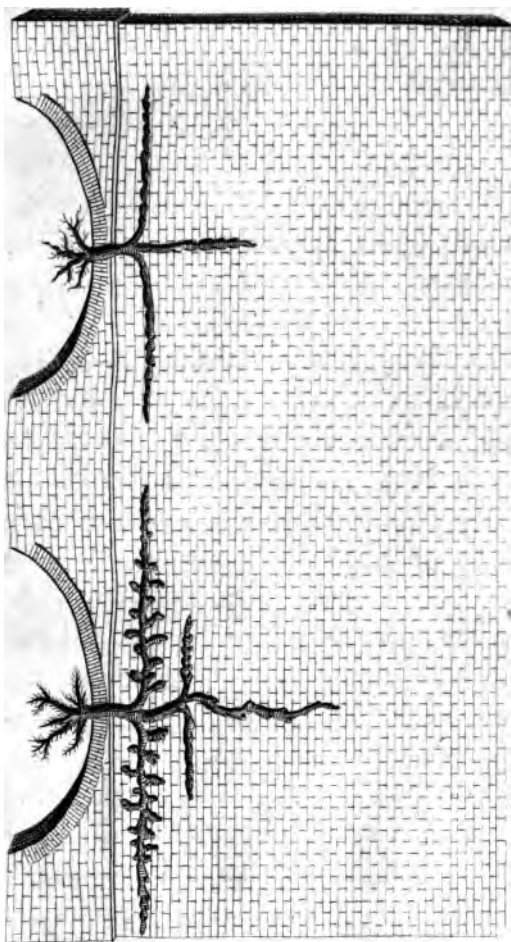
vernal equinox) but that is no great advantage, for before that time of the day the air will be sufficiently warmed.

Besides, if the wall is built full south, it will not be so proper for fruit-trees as a south-east aspect; for in the middle of the day, the sun will cause the trees to exhale their juices faster than their roots can absorb them, which will render the fruit smaller, and the pulp harder, and worse flavoured, than those which receive the heat more regular.

The wall B receives the sun about nine o'clock, which is a proper situation for some of the best kinds of winter pears, and which they well deserve; for they afford fine juices and rich flavours, when other fruits of the same quality are wanting. Some kinds of grapes, peaches, and nectarines will ripen well against it; and this has one equal advantage with the other wall A, viz. of the sun's rays striking obliquely upon it at noon.

The wall C receives but little sun, for it shines not upon it till three in the afternoon; but it may serve for fruits which
ripen

Plat II





ripen in summer, as cherries, plums, and some kinds of pears.

The wall D has the benefit of the sun no longer than nine o'clock; but may be suitable for such kinds of fruits as are adapted for it.

C H A P. XI.

Building of Walls after the cheapest and best manner, with the Distance each Tree should have.

THOUGH our English climate is not so warm as some others, yet, with some expence and industry, the nobility and gentry may have their tables furnished with good fruits, every month in the year; and with many kinds that are brought from more southern climates, as grapes, figs, peaches, nectarines, apricots, and the best kinds of pears, and plums, by preparing soils proper for them, and applying their tender branches to walls, as well for their support against winds, (which are apt to break them) as the advantages they

D 2

receive

receive from the reflected heat, which will bring such fruits to perfection.

It may perhaps be alledged, that the building of walls is very expensive. I grant it is the greatest expence that attends the making a small garden; yet as no other fence is so good either against man, or beast, and no other method so proper for the production of good fruits, the lovers of such will readily dispense with the charge.

But if a new plantation of fruit-trees, or kitchen-garden, is intended to be inclosed with walls, the bricklayer ought by all means to be subject to the direction of him who is to make and plant the same, for several reasons and advantages unknown to the builder, by which the expence will not be so great to the owner, as when walls are built before a strict survey is made of the ground, the levels taken, and the nature of the soil carefully examined: for I have known land inclosed with walls for a garden before the ground-maker had been consulted, in which much labour and materials were unnecessarily spent

spent in their foundations, with little advantage to the trees ; and much more earth than was needful being removed, greatly increased the expence of the work.

Where the limits of a piece of land are already fixt, and there is no opportunity of placing the walls to better advantage, (as to aspect) than what the boundaries have, in such situations the risings and fallings of the ground are to be observed, and the levels for the walls set out in such a manner as may occasion the least earth to be removed.

The courses of the bricks ought to be parallel to the surface of the borders, and walks; though 'tis best to make the borders about twelve inches higher than the other ground or quarters at first, and six inches above the walks, and bottom of the door-ways, for in a kitchen-garden the quarters will from time to time be raised with manure ; and was not this precaution taken, the walks would become the lowest part of the ground, which would render them too soft for the weight of a wheelbarrow in winter, and the borders too moist for the trees to live or thrive well in.

If the ground naturally lies descending, let the borders next the walls likewise lie descending; and if some parts are much steeper than others, a slope in the border and wall may be made to answer them; by this means there will be less earth to be removed, than if the walls were made either horizontal or descending.

If the ground inclosed is intended only for pleasure, the slopes, if planted with proper shrubs, will appear more beautiful; and in a kitchen-garden, if they descend towards the east or south, will be fit places to set several kinds of vegetables in, as beans, pease, &c. which will be earlier ripe by far than those which are set in a flat quarter: and I have known standard vines planted on such declivities, whose fruit has ripened well.

After the levels of the borders are fixt, preparation must be made for building the walls in the best and strongest manner, to prevent their leaning or falling, which are generally the effects of a too shallow foundation.

In building walls for fruit-trees, it should be considered what space of wall each tree will

will fill when come to its full growth: 200 square feet of wall should be allowed to a pear-tree of the most vigorous growth, upon a free stock, and 150 to those upon quince stocks; and the same for apricots, or almonds, and some of the largest cherry and plum-trees; other kinds of cherries, and plums less vigorous, should have 120 feet square allowed them, and the like space for peaches and nectarines.

When the spaces of wall designed for each tree are known, at the extremities of such spaces pillars should be erected, from which arches may be sprung, whose crown or top ought to be level with the surface of the border, and the trench in which they stand three feet lower; their length and breadth in proportion to the strength of the soil: if the soil be a strong clay, or rock, a square of two feet for the base of each pillar will be sufficient, but if it be a loose earth or sand four feet square at the base will be required, and should have a floor of oak or elm planks made fast to joists of the same timber, (yew, could it be had, would be better) to fix the masonry upon.

There needs no centre made with boards for turning these arches, for the earth may be trodden or rammed down hard between pillar and pillar, and then pared away elliptically.

In plate the second, there are given both plan and upright of a wall of this kind, which makes the method more intelligible; and plainly shews, that not one half of the materials is sunk in such a foundation, as in one built wholly with brick or stone.

I have lately seen some walls built for inclosing a kitchen-garden, where some part of the ground whereon the walls were built, was nine or ten feet lower than the surface of the designed borders; these walls were carried up from the bottom of those low places with brick-work without arches: but had the method which I have proposed been made use of, much labour and expence would have been saved.

But if ashes, elms, or other forest-trees, grow near the outside, it may be objected, that their roots will grow thro' these arches, and greatly impoverish the border; but to prevent their roots from passing through

a wall of a brick in breadth may be made from the bottom to the top of such arches.

Tho' where the lands adjoining are not planted with trees, these arches will be of great advantage to the trees in the garden, for they will extend their roots through them, and have double the quantity of soil to collect proper juices from.

I have seen some walls stuck with tiles projecting, called horizontal shelters; some built with large pillars, and others with curves: all these are attended with evils of one kind or other; for the horizontal shelters are great receptacles of noxious insects, particularly of the small green and variegated caterpillars, &c. which leave their eggs there to be hatched by the heat of the sun the ensuing spring, and then become very destructive to fruit, by eating both the leaves and blossoms of the apple, pear, &c. and even the buds before they are unfolded. These insects also devour the leaves of the apricot, cherry, and plum, and eat deeply into their fruits when grown to a good size; so that they perish and drop off the trees. These shelters are likewise

wife very prejudicial to both fruit and branches, by depriving them of the descending dews, from which they imbibe great nourishment.

The large pillars last mentioned have almost the same ill effects; besides, they shade the rays of the sun from the trees part of the day, more or less in proportion to their size.

Tho' walls built with curves have in calm seasons the benefit of more heat than others; yet in windy weather, the winds from some point or other rebounding from side to side, break and destroy the tender branches and blossoms of trees, whereby they are much more injured than the heat reflected from one wall to the other can be of advantage to them.

I have found by experience, that walls built straight and upon arches, as mentioned before, are preferable to all others, having a coping which projects about two inches to shoot off the rain, in order to preserve the wall. In some places, where proper stones were not to be had, I have known plaister used for this purpose, being cast in moulds about three feet in length, six inches

inches deep in the middle, and three inches deep on each edge, which when it was set and come to a proper degree of hardness, was laid upon the wall, and answered the end very well. There is likewise made by Mr. Henry Graves, jun. of Newark upon Trent, in Nottinghamshire, artificial stones for this and other uses; the ingredients are chiefly lime, plaister, and sand, and are much cheaper than stones brought from far distant places. But it must be observed that the plaister-copings will swell when new; so that there ought to be a space of about an inch left between each length, otherwise they will not lie close to the walls.

All kinds of copings ought to have a hollow made from one end to the other, with a gowge, or any instrument of that sort, on the under-side, about half an inch deep, and as much from the edge thereof; for without this hollow, when they project only two inches, the water will sometimes follow the under-side of the coping, and discharge itself down the walls, by which they are decayed when frost immediately ensues.

As

As to the height of walls, it may be made at the pleasure of the owner ; but I think betwixt nine and twelve feet above ground is sufficient for any kind of fruit-trees ; for the distance allowed from tree to tree is before fixt, in proportion to the height of the wall.

The thickness of walls ought to be in proportion to their height, and one of twelve feet high ought to have two bricks in length to the height of eight feet, and from eight to twelve feet high, a brick and half in thickness, to prevent the wall from being too heavy at the top.

C H A P. XII.

Observations on Stocks in general.

WHAT stock is most proper for each kind of fruit, ought as well to be considered and known, as what soil is most suitable to trees ; for on these two things the future vigour of trees, and the goodness of fruit, equally depend. The best way for those who intend to plant, is to raise their own stocks, by which they will be
better

better assured of what they do ; but if they buy their trees of nurserymen, they should diligently inquire upon what stocks they were propagated.

For stocks are in some measure a sort of soil to the kinds of trees raised on them ; as every part of a tree, let it be ever so minute, forms its root upon the parts below. Thus the tastes of fruit may be improved by proper stocks (and which are proper I shall shew hereafter) as well as by proper soils.

Perhaps it may be the opinion of some that all juices are changed by the pores of vessels through which they pass, and that all trees propagated upon any stocks whatsoever will equally produce good fruit, admit their growth is healthful and strong ; but if they will give themselves the trouble to examine this point carefully, and without prejudice, they will find as considerable a difference (with respect to fruit) between stocks as between soils.

Their opinion indeed has some shew of reason in it ; for as the apricot, almond, peach, and nectarine, are generally budded upon plum-stocks, yet bear fruit of their own kind, which shews that juices are changed

changed by passing through a small bud, and the little quantity of rind joined to it (the compass of both which is seldom above an inch in length, and the breadth about a fourth part thereof) yet if different juices be applied, the taste of the fruit will be different: I shall give an instance of this in the nonpareil, viz. If one tree of this kind be planted in a wet clay soil, and another in a loam properly dry, and both propagated upon the same kind of stock, and from one and the same branch, they will yield fruits very different from each other, both in size and goodness.

On the other hand, if two nonpareil branches are grafted, the one upon a paradise stock, the other upon a crab, and both planted in the same soil and situation, that upon the crab stock will produce fruit so sour and ill tasted, in comparison to the fruit of the other, that if a person should taste them both in the dark, he could not imagine them to be the same fruit.

I have seen very great difference between the fruit of these trees, when one was grafted upon a paradise, and the other upon
upon

upon a codling stock; for tho' the juices were so far changed by passing through the buds and pores of nonpareil branches, as to produce fruit alike in shape, yet their tastes were different, and somewhat resembled the taste of that fruit which the stocks would have naturally produced. The juices of the crab and codling are known to be very acid, but the juice of the natural fruit of the paradise is sweet.

This instance (though I could give many more both in vegetable and animal life) I hope will sufficiently shew how necessary it is to have regard to the choice of stocks; of whose proper sorts, for different kinds of fruit, I shall treat in their order. I have omitted the method of grafting and budding, because it has been already treated of by many, and is well known and performed by most gentlemen who delight in gardening, as well as by the nurserymen.

C H A P. XIII.

Of Stocks proper for Apricots.

AS most kinds of apricots, when fully ripe, have no very agreeable taste to a nice palate, for they are neither truly melting nor breaking, but rather too sweet and mealy; so when they are budded upon any kind of plum stocks which have that sort of juice, their fruit becomes more mealy and sweet than that of those which were budded upon stocks whose juices were more acid.

The stocks upon which I have found the apricot to prosper best, and yield the most palatable fruit, are the common red wheat plums; they have a tart taste, and are stocks tolerably free from gum and suckers, and may be raised from stones or layers.

I have sometimes thought (though I never tried it) that the Orleans stocks would make an improvement in the apricot, if they were budded close to the ground; otherwise they will be subject to gum, as old branches in that kind of tree are:

are : I can't recommend any other sort of stock, be the trees designed for walls, espaliers or dwarf standards.

C H A P. XIV.

Of Stocks proper for Almonds, with the earliest way of bringing the trees to bear.

Single blossomed almonds, with sweet kernels, will produce fruit, either if they are planted against walls, or are standards, and are proper plants for the mixtures generally made in the quarters of a large wilderness, or in bosquets of shrubs on extensive lawns ; they make a beautiful appearance early in the spring, by the abundance of their pale red coloured flowers, and bear fruit very plentifully without much trouble.

They may be propagated by budding on the muscle or common red wheat plum, or raised from stones ; tho' they bear not so early this last way : but if a branch from one of the young plants raised from stones, be budded on the same stock, it will sooner

E

pro-

produce fruit, both in these and any other trees ; because at the place of inoculation, it gives a curved shape to the capillary vessels, by which the speedy motion of the sap is retarded : for when the vessels are more straight, the sap, by its ascending motion, is hurried fast to the extreme parts of the principal branches, and there spends itself in shoots and leaves ; but when its motion is slower, as it is when the vessels are more circular, by grafting or inoculation) then the collateral buds receive a greater quantity of sap, and are prepared for blossoms, or with such shoots as naturally produce them, being less vigorous than the principal or upright shoots are. They that have leisure to make experiments, in order to raise new kinds of fruits, may, by taking a bud from a branch of any of their seedlings, and inoculating it upon its own stem, (or any other) as soon as 'tis capable of receiving one ; and, with due management, they will see the fruit of their labour much sooner than any other way.

CHAP. XV.

Of Stocks proper for Apples.

THERE are several sorts made use of; as those raised from crabs and apple kernels, from layers of the codling, paradise, and creeper apple-tree: I don't well know what sort of fruit the last bears; but trees which I have known propagated upon them are of an extreme slow growth, and may therefore very justly be called dwarfs.

It would be tedious here to point out what stock is proper for each tree that may be planted in a garden; for which reason I shall only lay down a few rules with relation thereto, which if observed will be a guide upon most occasions, viz. Those trees that are designed for espaliers or dwarfs of any shape whether horizontal, concave, convex, or conical, should be propagated from paradise or codling stocks, as the nature of the fruit requires; such as produce fruit of the sweetest flavour, and are soonest apt to turn mealy and in-

lipid, should, in order to improve their juices, be grafted upon codling stocks; and those whose fruit yields juices of a more acid and rough taste, may be improved (especially in a wet summer) by grafting them on paradise stocks, which naturally produce sweet apples.

Such as are designed for standards may be grafted upon crab stocks; or those raised from the kernels of apples, only grafting (as before directed for dwarfs) the sweet and mealy sorts upon the crab, and the others upon apples.

But as the fruit of standards is for the most part made use of in the kitchen, for baking, &c. I recommend the crab stock for most of them; because kitchen-fruit is not valuable without a tart taste, either in tarts or pies; and, if made into cyder, it is most agreeable to the palates of the best judges of that liquor.

N. B. Graft upon paradise and codling stocks as near the ground as possible.

C H A P. XVI.

Of Stocks proper for Cherries.

THERE are only two sorts that I know made use of to propagate others upon, that is, the small black cherry generally used in brandy, and a red one which grows wild in woods: both are very free from gum, whereas most other kinds are subject to it. The fruit of the red is somewhat more acid than that of the black, and different kinds may be propagated upon them at pleasure: but observe this, let the place of grafting or budding, in all such as are designed for standards, be at the height where the heads are intended to begin. If the stems be of other kinds than those above mentioned, they will be subject to gum, and not be so long lived.

C H A P. XVII.

Of Stocks proper for Nectarines and
Peaches.

TH E S E kinds of trees are originally natives of a warmer climate than ours; where the juices contained in the earth are by the sun's rays rendered more delicate: they are very delicate both in their stocks and soils, especially the best sorts, most of which are first raised abroad. The stocks generally used to propagate them upon, are plums, viz. the muscle and wheat plums, on which some kinds thrive well, and others will not, particularly the choicest sorts: the best method is to rebud them upon the most vigorous and healthy kinds, which are generally such as have been raised from stones in England; but few of those are to be compared in goodness with those raised in France, &c. though if these foreign kinds be first budded upon the plums before mentioned, they will not bear so well, and are more subject to blights than those that are rebudded upon healthy

FRUIT-TREES. 55

healthy kinds of peaches or apricots; by which they are rendered stronger, and their fruit abundantly better.

The best plum stocks for peaches and nectarines (that I am acquainted with) are the green gauge, either raised by stones or layers, on which most kinds thrive well, and produce healthy long lived trees, with well flavoured fruit.

C H A P. XVIII.

Stocks proper for Plums.

THE common sorts of these trees are generally raised from suckers, on which others of the best kinds are either grafted or budded; and several in common orchards are planted for standards upon their own roots, without any alteration; but the best sorts do mighty well when propagated upon the green gauge, raised as directed for peach stocks, &c. they are very proper stocks, for if the kind propagated happens to die, they will make trees upon their own roots, either dwarfs or standards, and bear good fruit.

C H A P. XIX.

Of Stocks proper for Pears and Medlars.

TH E R E are generally two sorts of stocks made use of for these trees, that is, the pear and quince stocks, and sometimes white thorns; tho' trees upon the last mentioned stocks bear, yet their fruit is always gritty at the core, therefore they ought not to be made use of: quince stocks in some kinds of pears produce the same ill effect, but are the most proper for dwarfs and espaliers; but the budding or grafting must be performed close to the ground. Suitable kinds may be propagated upon them, by examining the catalogue of pears and their qualities, and chusing such as are of the melting sort; for those of the breaking sort are apt to become stony, especially in a dry summer; therefore these last sorts ought to be upon free stocks, such as are raised from the kernels of good melting pears, gathered from trees that are healthy, whose branches are always free from canker: on these stocks trees
designed

designed for standards should be grafted, and so should likewise medlars.

C H A P. XX.

General Observations to be made in the choice of Fruit-Trees.

THEY that intend to buy their trees, should chuse such (after the stocks and kinds are known) as stand not too close in the nursery ; for if they do, their shoots will be long-jointed, tender and spungy ; besides, their buds will be very weak, especially the lowest, and will be long kept back from a bearing state, by having been deprived by each other of the sun's rays, of which no trees can have too much in a nursery ; for they attract and carry off a great quantity of watery particles from them ; and the earth about them when planted at proper distances, which, when they are not, are very prejudicial to them, and if weeds have been suffered to grow amongst dwarfs, their branches will appear like the branches of those which grew too near each other, or rather worse ;

worse ; in short, the roots of all trees are much hurt by weeds, for they exclude the sun's rays, which would otherwise warm the soil, and much encourage the growth of the fibres, and consequently that of the trees.

It is not much to be regarded from what kind of soil you take your trees, provided they have the following marks of health, viz. If their shoots at the extremities be very full of buds, and are plump, without any appearance of mildew or blight, and all their other parts free from canker, gum and moss ; for all these are symptoms of a defect in the roots ; and tho' planting them in proper soils will remove it in time, yet it will not be prudent to chuse such trees, for there must (as I have said before) be time and proper management applied in order to recover them from their ill state. Besides, there is a year or more lost with regard to their bearing, than if they are at first free from such defect and imperfection.

C H A P. XXI.

Shapes most proper for Apricots, Peaches, Almonds, Nectarines, the Morels and small May Cherries, when taken from the Nursery, either for walls or espaliers.

IN my opinion it is best for an apricot-tree to have, when planted, two strong branches beside collateral ones, as the figure of a tree taken from the nursery in plate IV. figure 1. if the branches have been once cut down in the nursery, and those parts well heal'd, they are not the worse, and the more the principal branches are expanded from each other, the better ; for when they have such a shape, there is more probability of their having put forth collateral shoots early in the last summer, and at more regular distances, than if the principal branches are more erect.

The peach, nectarine, and almond, all which blossom in the last summer's shoots, require the same shape with the apricot, and ought to be cut down in the nursery after the same manner. The small May

7 cherry-

cherry-tree, and the morella, should be treated the same way.

If almonds, apricots, and peaches, &c. be cut down in the nursery they may be helped with respect to their shape in April, by leaving such buds as point most to the shapes above directed, and by confining the shoots that come from them with stakes and bandages as they grow ; but I don't mean that the branches of these last mentioned trees should be brought to a level position, for if they were, they would be apt to throw out strong collateral shoots too near those which I call the main stems, which would greatly retard their progress ; for the two principal should be of as great a length as possible in a proper position, i. e. they should incline about thirty degrees.

C H A P. XXII.

Of Shapes proper for Pears, Apples, Plums, and the strongest growing Cherries, whether designed for Walls or Espaliers, and how they should be ordered in the Nursery.

THIS requisite that all these kinds should have three principal branches or more, answering the figure in plate III. figure 1. and if they be more than a year old from the time of grafting, it is a general custom with nurserymen to cut the branches every year, leaving only two or three buds of each young shoot; but I would have two side branches left to their full length, both in the apple, cherry, plum, and pear-tree, and only have the central or upright shoots cut to a foot in length, if there be three of them (as generally there are upon a grafted tree;) but if there be only two, then one of them ought to be cut to about the length of six inches, and the other left to its full length, which will produce from most of the buds studs

for blossoms, and that which was cut down will produce a succession of branches.

Whosoever has the management of these trees in the nursery, ought to leave those two shoots uncut which grow the most horizontal : cutting such branches as are most upright will cause fresh ones to issue ; for if there be only left on each upright branch about three plump buds, those buds which are nearest the bottom of the shoots are very flat for the most part, and of no value, and should be rubbed off to encourage the rest.

The last mentioned kinds of fruit-trees (in the nursery) may with very little trouble be brought to the desired shape, i. e. the side branches when a year old may be caused to grow horizontally, by confining them in the summer with hooked stakes ; but in confining them thus, great care must be taken, lest the branches, which are then very tender, be broken, and the trees thereby rendered rather worse than better.

C H A P. XXIII.

Shapes proper for Mulberries, Vines, and Figs in the Nursery, either for Walls or Espaliers.

Mulberries and figs are raised from layers or cuttings, and ought to be chosen with three branches or more, with large lively buds at their upper ends. Vines likewise are raised from layers, and the number of branches should be two or three. I am surprised that any one should prefer cuttings to layers, when the latter have roots, the former none, and must at least be a year more backward.

Note, I advise by all means to chuse such plants as stand thin in the nursery; for those that are near together are the most tender.

C H A P. XXIV.

Shapes proper for Dwarf Fruit-Trees of
all kinds.

THE kinds of fruit-trees generally kept dwarfs, are the apple, pear, plum, and cherry, and sometimes the apricot: but this last ought to be kept very low, otherwise it will suffer much, both in blossoms and fruit, from violent winds. This and all the rest should be chosen with four branches or more upon each tree, and though they are commonly propagated upon stocks very near the ground, yet their stems ought to be a foot high; for if they are not, the branches will be so near the borders, that in smart showers the rain will rebound from them to the fruit, and cover such as are lowest with soil, by which they will become less beautiful to the eye, and much worse in taste than others, by receiving too much water. Besides, if their stems be not of the height abovesaid, it will be very difficult to keep the borders clean from weeds.

All

All the shoots that form the heads of dwarfs should, as near as possible, be of an equal height, which may be effected by stopping the principal branch when a year old, at the height desired; at the same time all the lower buds should be rubbed off, and only five or six left, which are nearest the top.

If these heads be two years old before the trees are removed, they are not the worse, if the branches have been kept in a horizontal position, except one suffered to grow upright.

Some standard vines bear grapes which ripen well in England: they ought to have stiff stems prepared, which may be done by tying them up to stakes about a foot high, before they make a head. Figs may be trained up and brought to bear in the same manner; but these two last require a different preparation of soil, as before has been shewn.

Gooseberries, and currants, bear best upon single stems, about the height of those of the other dwarfs, being free from suckers at their roots, and having their

F heads

66 A TREATISE OF

heads about two years old, with branches regularly spread round, but not too near each other.

C H A P. XXV.

Shapes proper for Standard Fruit-Trees.

THE fruit-trees commonly planted in orchards, are the apple, pear, plum, cherry, medlar, walnut, mulberry, and quince-trees; the last of which is upon its own root; from which a straight stem ought to be trained to the height of six feet at least; if lower, their heads will be injured by cattle, when they are put in to pasture amongst them, as they often are when the trees have been planted a few years: all the above mentioned trees should have straight stems, of the same height with that of the quince, and ought each of them to have five branches or more at the head, putting out at equal distances from the ground, and from each other as near as possible; none but one of the branches should stand erect, and if the heads

heads be above a year old, they are not the worse. Note, the almond, sweet chesnut, and filberd, must have shapes like the former.

C H A P. XXVI.

The Method of taking up Trees and re-planting them in the same Garden.

TREES should be taken up very carefully, lest they be injured, for on this their future success depends; tho' I have seen it performed very carelessly by nurserymen's labourers, who only strike down a spade with their feet round them, and then with both hands pull them up, not having any regard to the uncut roots, which are very often broken off, or split near the stem; besides, those that are cut thro' prove very often too short.

Tho' authors have directed that the roots should be reduced to a certain length, yet I am well assured, that the longer the horizontal roots are left, the better they are; for they chiefly absorb such juices from the earth as promote vegetation;

and therefore no length can be well assigned, as to the roots, but it ought to be, carriage considered, as great as possible, if they are brought from a distant nursery, or transplanted into some other part of the same garden; in the last case there is a probability of the roots taking with them a large quantity of the adhering earth, if the trees be taken up artfully. And a fruit-tree, if it be required, of more than twenty years of age, may be transplanted very safely, without the loss of life, or any of its useful branches.

The right method of taking up trees, is to take off the surface of the earth round them, so deep as to bare the uppermost roots to a space proportional to the size of the trees, in order to lessen the weight; otherwise they will not be so fit for carriage, and they will be in danger of being broken by the weight of earth which is upon them.

When either large or small trees have had their roots bared in the manner just before mentioned, then a trench must be dug quite round them, so wide and deep that the earth may be easily taken from

from under the trees, leaving only that which incloses the greatest part of the roots; care must also be taken to cut the longest roots that are in the way, with a knife, not with a dull spade, for that will rather break than cut them, and will shake off too much earth, especially from the largest kinds of trees, because their roots are strong, and require a greater stroke with the spade to break or cut them; and the larger trees are, the more earth ought to be left about their roots, in order to retain proper juices for the support of the other parts: after they are thus opened and cut round, a hand-barrow may be thrust under them, on which they may be carried to the place where they are to be planted; but before they are planted, let all the large roots that are in sight be carefully examined, and if any of them are broken, let them be cut off with a sharp knife, in such a manner, that the part sloped may stand downward like a horse's hoof; for if the slope be on the upper sides of the roots, their woody parts will be apt to receive too much moisture, and thereby become rotten, and greatly

retard the growth of the trees for many years.

I shall defer the method of planting, till I have spoken of the management of trees, that are to be fetched from distant nurseries, which cannot have much earth brought with them; but the length of the roots ought to be as great as possible, as has been before directed: the roots of those must be bared and opened, in the same manner as the roots of trees which are to be transplanted in the same garden; they must not be too violently pulled by their stems, but let all their roots be cut thro' with a knife, or sharp spade, and packed up, as I shall direct in the next chapter.

C H A P. XXVII.

How to pack up Trees so, as that they may be carried safe to places remote from whence they are raised.

I Must own that I have received peach-trees and nectarines from Mr. Henry Woodman of Strand on the Green, in the county of Middlesex, which I planted for the Reverend Mr. Ewer, of Bottisford near Belvoir castle; all of them lived and some bore fruit the first year after planting, tho' they were brought above a hundred miles, and only packed up with straw and matts; they have been planted nine years, and are now strong healthy trees.

But there is a better method of packing trees, especially apples, pears, plums, cherries, &c. that are designed for walls and espaliers, by reason of their shapes described some pages before, which is this. Let there be provided large hampers, made of the same materials as those commonly used for packing bottles in, when they are to be conveyed to distant places, and let

their length be about four feet, their breadth at each end about two feet and a half, but in the middle they need not be above one foot and a half broad, and let their depth be in proportion to the number of trees intended to be packed therein; then let moss be gathered, which grows plentifully in the shade under hedges, or in woods, and cover the bottom of the hampers therewith; and after, let there be between each layer of trees, a layer of moss; if some of the trees be laid with their roots to one end of the hamper, and some to the other, more may be packed therein. And if the moss, which is much softer than straw, be moderately moistened at first, it will retain its moisture a great many days.

C H A P. XXVIII.

The Benefit of cutting Roots and Branches
at the time of removal.

AT the time of planting fruit-trees, some cutting is required both in their roots and branches; but before any directions can be laid down for pruning,
it

it ought to be well considered in what cases it is serviceable. The roots will certainly be lessened by being removed; if they be taken up ever so carefully, some of the small ones will be broken off, and others in carriage become so dry, that their minute vessels can no longer be serviceable to the plants they belonged to; then consequently, the quantity of juices which the roots that are left can absorb, must be less than the quantity absorbed by all the roots before they were taken up; for which reason it will be very necessary to lessen the branches in proportion, as near as can be reasonably conjectured, to the vessels that are lost at the roots: if this be done, the trees thus removed will continue their growth, except shaken by the wind, or some other outward obstruction: but if all their branches remain upon them, if they live, they will make but very slow progress in shooting the next year, tho' planted in the most proper soils; an ill state of health will ensue, hardly ever to be altered or cured by even the most proper treatment, for the sun will cause them to exhale their juices as fast thro' the pores
of

74 A TREATISE OF

of the rind and leaves, as it did before they were removed, and the number of vessels in the roots being lessened, are not sufficient to keep the capillary tubes properly full, whereby a part or all of them become useless. If the whole number of vessels be destroyed, death must ensue, and if only a part of them, sickness: which I have very often seen; for the rind on the sunny side has been quite dead before June next after planting.

C H A P. XXIX.

Cutting the Roots of Trees, &c. Observations on the common method.

WEAKNESS is occasioned by different errors in cutting. The first and greatest of which is, the cutting of the horizontal roots short, at the time of planting, tho' it is done according to most authors direction; but I suppose, when they mention the cutting of roots of fruit-trees, to nine or ten inches long, they only mean the tap or downright roots; for shortening the horizontal roots too much will

will certainly lessen the quantity of juices, which trees naturally require, because there will not then be left a sufficient number of pores to receive them.

If any of the strong roots be broken in the carriage, and the small fibres dried and useless, in such case the latter ought to be cut off close to the stronger to which they are joined, otherwise they will corrode, and mix their corrupt matter with the natural juices contained in the pores of the earth, whereby they will be rendered unwholesome before they enter the pores of the living roots adapted to receive them: and if those roots that are stronger be broken or bruised, they must be taken off with a sharp knife, sloping on the under-side; if not, they will produce the same ill effect. Let all those that be whole, and are in a horizontal position, or near it, be cut to a great or unlimited length; yet the top or downright ones, should be cut to about the length of a foot, by which the number of roots will be increased, and sometimes the new ones will extend themselves more horizontally, and be of greater service to the trees, than those

those which strike downward; for the latter commonly cause trees to shoot forth branches too luxuriant and full of sap, which will not produce blossoms.

I grant, that all trees imbibe more or less part of the juices that support them, from the dews in the night, thro' the pores of the rind and leaves; but the sun attracts more in the day than they imbibe in the night, otherwise they would grow without any assistance at all from the roots.

By what has been said, I think it appears necessary, to have the horizontal roots left as long as possible, that the branches may not want a sufficient quantity of moisture for their nourishment.

I cannot in this place help taking notice of a method recommended and practised by too many, that is, when the roots are become dry, to place them upright in water, for the space of twelve hours before planting; but this method is very injurious to them: for at the season of the year in which trees are removed, the weather is cold, and the roots having too great a quantity of water in them, and
wanting

wanting heat enough from the sun, to cause an immediate evaporation, are thereby starv'd.

I have always found it more proper to plant immediately after the roots were dressed, in the manner before-mentioned; and it is but reasonable to imagine, that they will meet with moisture enough in the earth, and such sorts as are more proper for them, than the waters taken from either springs, rivers, or ponds; for the former, by passing through the pores of the earth, are mixt with the salt particles thereof, which cause a fermentation in the vessels or capillary tubes, as soon as they enter them.

C H A P. XXX.

Of pruning Branches at the Time of Planting.

A Method which I have observed to be generally practised, though of very ill consequence, is cutting the branches too short, and leaving too many in number

ber upon each tree: by which means the trees are injured many ways; for though they sometimes grow vigorously, yet the branches are unduly placed, in any kind of fruit-trees, either for walls, espaliers, dwarfs, or standards: if the branches are too near each other, some of them will be deprived of the benefit of the sun's rays; and when the branches of wall-trees, or espaliers, stand near each other, upon their stems, and are cut too short, it will be impossible to lay them in a horizontal position, without being much closer than they ought to be, in order to make them bear; and if many of the new branches are cut out the next year, those that remain will be more luxuriant, and not blossom very early.

Besides, cutting branches too short, viz. to the length of six or eight inches each, at the time of planting, sometimes occasions death, or sickness, especially if the branches be very strong, or more than one year old; for then the buds left on, having been so much shaded, are very flat, and their foldings much more difficult to be forced open by the sap in its ascending motion, than those

those at the extremities of the shoots, which always appear more plump.

This is the fate, in a great measure, of those that were cut down in the nursery the year before, which with proper cutting and management might have been made good trees. This method of short cutting, which, as I have observed, is generally practised upon standard-trees of all kinds, has different effects, according to the various states the heads of trees are in at that time, for some have their branches of one year old only, others of two, and others of three years old, &c. Now if the head of a tree be only one year old, shortening the branches causes the succeeding ones to spring out too near each other; by which they will, in a very few years, either cross and gall each other, or the head will be composed of too great a number of branches; so that all of them will not be of a proper strength, as shall be demonstrated hereafter, by cuts adapted to the several kinds of fruit-trees.

This short cutting or stumping is the most injurious to trees whose heads are furnished with branches of two or three years

years old, &c. whether apples, pears, plums, or cherries, for their buds are either prepared for blossoming the next spring, or else with spurs, which would blossom the second or third year after planting; but such buds seldom produce shoots.

To prevent the several disadvantages mentioned, by improperly cutting the heads of trees at the time of planting, it is necessary to consider, first, what proportion the roots lost by removal bears to those left on, and in such let the number of branches be lessened, with a proportional allowance for the drying of roots in the carriage, and the disadvantage which in transplanting must attend them, the earth being not so naturally placed to them as before.

All kinds of low trees may as well be cut after planting as before, but tall standards should be cut before, by reason of their height. After I have done with planting, I shall give full directions for pruning fruit-trees of all ages; and I hope what I have said here will prevail upon every observing reader, not to cut rashly at the time of planting.

C H A P. XXXI.

Planting of Wall-Trees, Dwarfs, and
Espaliers.

THE method of preparing different soils for borders has been treated of before, in which directions were given to turn them over twice before planting. I shall here only add, that the oftener they are so turned, the better the ingredients will be mixed with the natural soil, and that it will be of service to have the holes wherein the trees are to be planted, dug about a week or fortnight before; for if there be any tough or hard particles in the soil, they will be attenuated by being exposed to the air, and changes of weather.

Fruit-trees may be planted from the latter end of October to the end of February, at any time when there is no frost; but October and November are the most proper months for planting, because the weather is generally more mild and open in these, than in the other three; and the

G

earlier

earlier trees are planted, the more time will there be for the earth to settle well to their roots before the spring; but when the borders cannot be prepared so early, 'tis better to plant later, even to the middle of March, than to lose a year; for undoubtedly all those that are at the charge of building walls, would willingly have fruit as soon as possibly they could; and the loss of trees, if there be any, by planting so late, may be supplied the October following,

In some springs trees are more backward in putting out by near a month, than they are in others, which ought to be well observed with regard to planting; if the buds begin to open, 'tis too late to plant, if the trees are to be removed to any considerable distances, for then the vessels of the roots are more open than before, and sooner become useless by draught in carriage. Trees may likewise be injured by being removed too early in October. As soon as they have shed their leaves, 'tis time to remove them. Sometimes apricots, peaches, and nectarines, will retain their leaves till December; if they do,

do, they may be safely removed in November, if the weather is open, for the parts which retain the leaves so long are commonly such as are to be taken off, being very apt to be killed by the winter's frost.

The distance which trees should be planted from the wall cannot well be assigned; it must be in proportion to the length of the roots, which ought not to be shortened in order to bring the stem nearer the wall; but if it may be done without cutting the roots, I would have the stems placed about ten or twelve inches from the wall; for when they are fixed at a much greater distance, they will be more apt to throw out suckers from their roots.

Care must be taken, in planting, to fix those parts that are cut at the place of budding or grafting next to the wall, for they will thereby be sooner heal'd, and discharge the wet much better than if they were placed on the outside.

The holes having been dug, trial must be made to see whether they be wide enough to receive the roots without pressing upon the sides, and of such a depth that the

uppermost roots may, when fixt therein, stand full as high, or rather higher than the surface of the border wherein they are planted; for as the borders will settle and be raised again in a few years, were not this precaution taken, the stems of the trees would be buried.

'Tis best planting when the soil is moderately dry, for then it will intermix itself better with the roots than when it is wet, neither will it be so apt to set hard when trodden close; but if the soil be too moist, it will be proper to mix with it, before it is applied to the roots, either dry foot or coal-ashes sifted very fine, which always have been kept dry; for the earth, and ingredients applied to the roots, ought always to be as fine as possible. When the roots are all covered, let the trees that have stiff roots be shaken up and down with the hands, that the earth may pass more readily between the roots, and fill all the cavities: after the roots are covered to the depth of three inches, let them be gently trodden round, without breaking or bruising them; then let a hillock be raised round each tree, six inches higher than the other parts of the
the

the border, and about a yard in diameter ; afterwards let each hillock be covered with foot or coal ashes, mixt with an equal quantity of earth, to the thickness of half an inch, and all over the border about one fourth of that thickness, which will defend the roots from dry or frosty weather. And if the earth be very dry at the time of planting, let the trees be moderately watered round their roots.

The method of shaking and treading is not to be used, when trees are removed from one place to another, in the same garden, with earth about them ; for shaking will only draw the small roots into heaps, and treading will break off the earth.

If trees be planted in November, or earlier, let all such branches be taken out as are not consistent with the trees intended shape ; but they must not be nailed up till February or March ; before that time the roots will settle with the borders, if the trees be let loose ; but if they be confined to the walls, the earth then settles from their roots, and leaves a cavity under them.

C H A P. XXXII.

Observations on Pruning the Heads of Trees
or Branches in general.

THE best kinds of fruit-trees that grow in England are generally planted in gardens fenced with walls, to which their branches are confined, that they may have greater advantages than common from the sun's reflected heat, and that they and their fruit may be defended from the violence of winds, which otherwise might be very destructive to both.

There are generally in the same garden other fruit-trees, planted either to make espaliers or dwarfs; all which require great care to keep them in due order, that the fruit which they produce, and the pleasure they afford to an admirer, may in some measure make amends to the proprietor for the charges of building, planting, &c.

The erecting of walls being very expensive, no part of them ought to be left vacant, where any thing tending to pleasure or advantage may be placed.

I have

I have before shewn what I thought necessary to be done before, and at the time of planting; and shall now give some directions for keeping trees in the most healthful state, productive of good fruit in the greatest quantity, and as early after planting as possible, without injuring them for the future: to effect which many endeavour by various ways, and especially immoderate pruning, tho' without effect; for when the knife is most made use of, there is commonly the least success. Tho' there is an absolute necessity of lessening the number of branches at the time of transplanting, or soon after, yet they ought to be lessened in such a manner that those left on, and such as proceed from them, may extend themselves in the least time, so as to fill the space of wall assigned them; and that all the trees planted may, one with another, cover the whole wall, without having their branches too near each other, but that each may receive equal advantages from the sun, air, and dews, the stronger being confined in such a position, that young ones may issue, and be obtained from them when wanted.

But before I shew the method of pruning trees designed for walls or espaliers, I shall make some observations on those kinds of standard fruit-trees that are natural to our climate ; for, I think, in these nature best shews us the time and manner of pruning.

If there are two apple, pear, plum or cherry-trees, equal in health and strength, at one year old after grafting, let them remain some years after in the same stations, having sufficient space to extend their branches in, and one of them be pruned, and the other not, but suffered to grow in a shape quite rude and natural, the latter will produce fruit much earlier than the other, though, perhaps, its branches will not be in so regular a position as those of the former ; hence it may be reasonably inferred, that premature pruning retards bearing, and that pruning a healthy, strong standard in what manner soever, before blossoming, will keep it longer back from a bearing state than it would be, were it left unpruned to the direction of nature alone ; for shortening the branches takes away the buds from the extremities, which
always

always blossom first, and if some of them be quite cut off, the vigour of those remaining will be increased, and the more vigorous the branches are, the longer it will be before they blossom; for it is observable, that those kinds of standards before mentioned, produce most fruit near, but below such parts of their branches as were once the end of a year's shoot, and on such branches as are horizontal or declining; for which reason I think it best to leave vigorous standards unpruned, till they have blossomed, or only to take out some of the upright branches that would gall others.

Perhaps it may be said, that of two of these trees, the one cut and the other uncut, the former will produce better fruit when it bears than the latter. I grant it will, were the latter never cut at all; and that pruning after blossoming, as I hinted before, is very serviceable to standards in the following cases, which are manifest signs of their want of it. First, when they blossom much, but bear no fruit, which shews that they are too weak, and that part of their branches ought to be cut off, by which those that are left will receive
a greater

greater quantity of sap, and produce as good fruit as others of the same kind that have been often pruned. 2dly, When the fruit which they bear is small, and some of the branches that formerly bore are covered with moss, or are dead, then in order to enlarge the fruit, those mossy and dead branches should be taken out. 3dly, When trees put forth young branches out of some of the old ones which have born, it shews they want to be relieved by taking out the old ones, and enabling them to produce their fruit upon others that are young.

From what has been said, I think, it appears very plain, that cutting of standard trees before they bear, is injurious, though afterwards serviceable ; i. e. of the cherry, plum, pear and apple.

I never saw apricots, peaches, or nectarines, bear without cutting ; but the almond, which nearest resembles them, bears plentifully, and produces part of its fruit upon branches made the year before, and part upon studs proceeding from branches of two years old ; both of them are furnished with buds at their ends, which produce

leaves, and are a good shelter to the blossoms and fruit. It is observable, that this tree bears most fruit at the end of its branches; and for this reason, the ends of branches ought not to be taken off, neither from this tree, nor any other nearly like it, as those are which I just before mentioned. But the apricot sometimes produces shoots in autumn, from the ends of those shoots made in the summer; these latter made shoots generally die in winter, therefore should be taken off at the next time of pruning.

Though I have shewn the ill consequences of pruning standards before blossoming, except at the time of planting; yet trees planted against walls should be pruned in a proper manner, in order to reduce their branches to a just number: for were all to be left on, there would be too many to place against the wall, without being too near each other, or at least than those would be upon the same tree, if it was a standard; for there is a great difference between one and the other; most standard trees grow naturally in shape like a cone or hemisphere, so that if one tree be a standard,

ard, and another planted against a wall, and their branches extend in height and breadth, alike from their stems, yet that which is a standard fills a space more than double to that of a tree planted against a wall: consequently, more than half the branches or buds which put forth from the latter ought to be taken off. This is the best reason I can give for pruning of wall-trees, before they have born; but afterward it is requisite to take those branches out, and leave young ones to succeed them. But there is no need of shortening branches in any kind of old fruit-trees, to increase their number, for young ones will naturally proceed from those that are nailed horizontally.

There are many that prune all kinds of wall-trees immoderately, twice in the space of a year; First, in the winter they shorten all the branches, under the pretence of getting new wood to cover the walls; Secondly, in summer they cut a large quantity out of the trees; because, as they say, the wood is too strong, or that there is too much. But to cut in the winter to gain wood, and to cut wood out in the summer,

be.

because, forsooth, it is too strong, is, I think, acting counter to nature, and spending sap unnecessarily ; for, as the strength of the wood, and the growing of the branches too near each other, are entirely owing to the winter cutting, if the branches were then placed horizontally on the wall, there would be no occasion to cut out so much in the summer ; and the sap which the roots collected from the earth, would form new branches more fit for the production of fruit, and in such places where they might continue ; so by this method the trees will bear, and the walls will be covered sooner than by any other. It may be objected, that leaving the branches to so great a length, as not being cut at all, will weaken trees, or in other terms exhaust the sap from the roots ; but the contrary may be easily proved. Admit both sides of a tree have at first an equal number of branches, and let either of the sides be cut at pleasure, and observe, by the buds what number of shoots may be produced from the remaining branches on that side which is cut short, then let whole branches be left on the other side, in proper places, and the

the useleſs buds taken off, till their number on each ſide be equal; by this management it may be reaſonably expected, that there will be an equal number of new branches on each ſide; now, if no more ſhoots be produced, by leaving the branches long, on one ſide than there are on the other which was cut ſhort, how can one method weaken a tree more than the other? The conſequence, indeed, of leaving the branches long will be this, they will have produced ſhoots at more proper diſtances, and cover the wall ſooner with ſuch as will earlier bear, than thoſe on the other ſide which were cut ſhort; beſides, there will be no occaſion to thin them ſo much in ſummer on that ſide where the branches were left the full length in winter, and the uſeleſs buds diſplaced.

I have ſeen neſtarines and peaches, that have been planted againſt walls ten or twelve years, which have been annually cut in the winter, in order to make them ſtrong, and thinned in ſummer, according to the uſual cuſtom, that the fruit may be larger, and not too much ſhaded. Excellent reaſons and managements! whereby
two

two thirds of the branches are either cut or shortened, and, at the same time, a third part of the wall is uncovered. Had the branches shortened in the winter been left their full length, so as to cover the wall, and in April all their buds rubbed off, except some to produce shoots in proper places, then there must certainly have been more fruit, and fewer branches to be taken out in summer; for the quantity of sap, which supported them, might have supported as much fruit as would have been equal to them in weight: besides, I have known by experience, that trees, by this short cutting, are not so apt to bear.

At the request of a certain gentleman, I shortened the branches of a peach-tree on one side, according to the rules laid down by the best authors; but the other side I nailed to the wall, without shortening one branch, (which is the method I have practised many years;) the crop of fruit, as well as the number of young branches on that side of the tree where the shoots were not shortened, was so greatly preferable to those on the other, that the gentleman was thoroughly convinced by this, and other

instances given him, that shortening of branches was an ill practice, both in the peach-tree and many others.

The fig-tree, of some kinds, bears plentifully upon standards, if their branches be never shortened; and I have seen fruit ripen well upon them in England, where the soil was dry and mixt with stones, in such places where they were sheltered from the winds; but in others, where they are exposed, the fruit is commonly beaten off by the winds before it arrives to maturity, as it always grows very near the ends of the branches, and on no other parts, except the present years shoots, or the upper ends of those of the last year; therefore their shoots ought not to be ended in the winter; and there is no necessity of shortening to procure young branches, for there is always a sufficient stock of them rising yearly from the roots, which, when the trees are planted against walls, may be trained up to succeed others; and if they grow to the top of the wall, may be taken out close to the ground. I shall say no more concerning the usefulness of pruning, but shew how it ought to be performed upon the different kinds of trees.

C H A P.

e.

in
to
ry
ty
ce
ch
ee
he
et
to
er
a
all
br
et
in
to
r,
ve
g.
2.

96

insta

bran

peac

T

tifull

neve

pen

the 1

such

the 1

exp

by th

as it

the t

cept

ends

thei r

wint

ning

is a l

year

are 1

up 1

the 1

to t 1

cerr

how

diff

C H A P. XXXIII.

Cuts of Trees explain'd, as in the third Plate.

I Am sensible that cuts made use of in several tracts of gardening, in order to shew the figures of fruit-trees, are very much ridiculed, because of the uncertainty of the number of branches which a tree may put forth, and of the difference which may be easily discerned between one tree and another, that are both planted at the same time, in like soil and situation. Yet I have chosen to make use of sketches to explain my method of cutting, &c. better than I was capable of doing by words only.

Plate III. Figure 1. is the shape of a tree that is properly strong. What I call properly strong, is, one that has two or three branches of a yard in length or more; one that has its branches less than two feet in length, I call weak, which has been grafted a year, and taken up in order to transplant it, whether it be an apple, pear, or plum, or cherry-tree, for they all have nearly this shape at the age aforesaid. Fig.

2. is the same planted against a wall, and cut in the manner directed by all authors that I have read on this subject. Fig. 3. represents the same tree with the shoots it would probably make, if it were properly taken up, and planted in a suitable soil. Fig. 4. is the same tree transplanted as Fig. 1. being cut and nailed after the method which I have practised many years. Fig. 5. is the same with the increase of branches made the first year after planting, and nailed as intended for the winter order. Fig. 6. is a tree when grown to the height of the wall, and the breadth allowed to each tree, suppose it be a pear upon a free stock, as may be proved by the scale, if by it the space of wall it covers is measured, for it is the same as is before allowed for pear-trees upon such stocks.



C H A P. XXXIV. •

The Instruments and Materials proper for
a Dreſſer of Fruit-trees.

1. **A** Well-tempered knife, with a narrow blade at the point, not much crooked.

2. A whetſtone for ſharpening it.

3. A mallet and chiffel, well tempered, about two inches broad, and not too thick.

4. A pair of ſhears or ſciſſars to clip ſhreads with.

5. Strong nails a little more than an inch long, with thick ſhanks and heads: thoſe made of *English* iron are beſt.

6. A hammer, with a ſhaft longer than the ſpaces between the rounds of the ladder.

7. A baſket about 12 inches long, fix broad, and fix deep, with loops to put a belt through on one ſide, that it may hang before the pruner, having the ſide on which the loops are made bending, to reſt the better againſt his body, and a diviſion in the middle for two different ſorts of ſhreads,

the longest an inch broad or more, the shortest about a third part of an inch broad; the latter are best for the bearers in peaches and nectarines.

8. A ladder in length suitable to the walls.

9. A deal plank to tread upon, with a strap at one end to draw it by, if there be nothing upon the borders.

10. A small pair of pincers, with which nails may be drawn out better than with the claws of a hammer.

11. A whitewasher's brush will be useful; for when trees are grown nearly large enough to cover the wall, they should be unnailed about three weeks before they are cut in winter; it will be of service to them, for the winters rains and snows will better wash off and destroy part of the caterpillars eggs, which are lodged upon various parts of the trees and walls, and likewise other insects that harbour there in winter, in the foldings of the old shreds, but by taking these shreds off, and turning them when used again, they lose their shelter. Before the trees are nailed up again, let brine be made strong enough to bear an egg, and with it and the brush let the walls
be

be washed all over, or as much as can be without breaking the buds or branches; this will be a great destruction to the insects at that season of the year. But before cutting and nailing, let the following rules be observed; let all cuts be made on the sides next the walls, and never let two branches be laid across each other, except upon an extraordinary occasion for one year, not longer; neither let a branch be pinched with the shreds. Let the strong branches have strong shreds. Never let a branch touch a nail, so as to press against it. And before old shreds are used, let them be soaked a night in the aforesaid brine.

C H A P. XXXV.

The first Time of pruning and nailing a Pear-Tree upon a free Stock, which had three strong Shoots or more at the time of planting.

PEAR-trees bear their fruit upon studs or spurs of various ages; and there are some few which I have seen that bear upon the extremities of the last year's shoots,

H 3 others

others upon studs or spurs * that proceed from branches of two, three, four, or five years old ; and some kinds bear best upon collateral branches of near a foot in length of that age, left to the direction of nature, without being shortned, as standards when their branches are horizontal or depending. I would have no other branches left unnailed, but such as grow out of the sides of others, and that don't much exceed half a foot in length.

Fig. 4. of the last plate, represents a tree properly strong, and is the same with fig. 1. only transplanted, cut and nailed. As I make use but of three names for all the several branches of a tree, I shall here explain them, that the reader may better understand my meaning. The centre-branch B is called the stem, through which the sap is conveyed from the roots, to serve all other parts of the tree ; the other two A and C are horizontals, and those proceeding from the sides of them, as in fig. 5, and 6. are bearers.

* What I mean by studs or spurs, are collateral branches not exceeding six inches, having buds at their extremities.

In the beginning of March, after planting, let the two lower branches, A and C, be nailed quite flat to the stem, to about three inches of the other ends; then turn them, by nailing more upright, which will occasion the sap to pass more freely through the extreme buds, and lengthen the horizontals: but care must be taken, lest they slip from the stem; to prevent which, let each of them be nailed near it with strong shreads, and the nails placed on the upper sides, that the branches may press upon the shreads; for, if they press upon the nails, they will be injured by them: this is a necessary caution, many branches having been so deeply gall'd by nails, that a canker has ensu'd, which often proved mortal. As this method of nailing these two branches at full length is very uncommon, perhaps my reason for so doing may be demanded, which is this; the shortning of branches, if they be healthy, which they generally are upon free stocks, takes off such buds as would earliest bear, and it occasions two or three of those that are left on, and nearest the cut, to put forth shoots, which are at a year old as far from

bearing, as that which produced them was before it was cut, so that by cutting there is a year lost before they bear ; and every time this is performed on the ends of branches, it retards their bearing: I own it increases the number of branches, but many of them will be in such places where they cannot continue the next year, without being too near each other in some parts : I nail them horizontally, with an intent of procuring bearers at all parts of the horizontals ; for the buds nearest the stem are always more compact, and of a flatter shape, than those which are nearest the extremities of the branches, and are very seldom opened, if nailed upright ; then the lower parts of the branches will be left naked, and the upper will put forth shoots of too great a length to be left unnailed ; and if the next year they be cut out, or shortned, it increases the vigour of the other parts so much, that many studs put forth shoots, which would have produced blossoms in a year or two more ; and if nailed up, will be nearer each other, or in a more erect position than what the best authors direct, and the best pruners practise.

I come

I come now to the center branch or stem; this ought to be left 12 or 14 inches long, or longer, with three or four buds * or eyes at the upper end that appear plump, and are in a fair way of putting forth shoots : let all the others that are below be rubbed off ; for those that are nearest the bottom are most flat, and when shoots are produced from them they are weak, and the more so towards the lower end of the branches ; besides they are in such places where shoots are not wanted for my purpose, therefore they should be taken off ; for the quantity of sap, spent in forming useless branches, will be useful if driven to the upper buds, which are designed to produce shoots in proper places. Let the stem be cut an inch at least above the uppermost bud ; for when amputation is made too near it, it sometimes prevents its shooting, and if it shoots at all, it is but in a very weak manner : the reason, I imagine, is, that too great a quantity of watery particles, entering into the sap vessels at the part cut, chill and retard the sap's motion, or by letting out of

*Buds or eyes are those parts which appear higher than the bark upon a branch that was made the last year.

these

these vessels too great a quantity of air, whereby the force of vegetation is weakened.

As all the several kinds of bon chretiens seldom grow prosperously, if they be cut too short at the time of planting, by reason of the long spaces between their buds, whose lowermost are very flat, and scarce discernible, so they, and all such trees as produce shoots like them, should be cut at a greater length than fourteen inches, in order to preserve some plump and full buds upon that part of the shoot left on, which will certainly break forth into shoots.

The branch B is left fourteen inches in length, with an intent to gain proper branches to form horizontals at a suitable distance from the others, for they ought not to be nearer than twelve inches, let them be of what kind soever.

Perhaps it may be demanded why I cut this branch at all; to which I answer, that as the tree is supposed to have been brought from some distant place, part of the roots which it had before it was taken up must undoubtedly have been lost, and some

some of the smallest fibres become dry and useless, by being exposed to the air in their removal ; therefore this branch is shortened, and the lower buds destroyed, with a design of lessening the number of those parts that receive the sap from the roots in proportion as near as may be judged to the parts of the roots lost by removal ; for as all the roots collect from the earth a quantity of juices only sufficient for the due nourishment of the whole tree, so a part of them can collect only a quantity sufficient for a part of it ; now if the whole branch be left on with all its buds, the remaining roots cannot supply its vessels, and keep them properly full to its extremity, from whence the death of part of the branch ensues. As soon as a part of it becomes dry and dead, the mortification descends very fast to the destruction of the branch it begins in, and sometimes of the whole tree.

C H A P. XXXVI.

Pruning and Nailing of a Pear-Tree the first Summer after planting.

THE Fig. 4. represents a tree cut and nailed with three or four buds at the upper end of the stem, and two horizontals left at full length, to which due regard must be had the first summer, and let all the other buds which may probably break forth from the stem be rubbed off; the horizontals must be also well observed, for sometimes it happens that a strong shoot, or more, will put out from those buds near the stem, which will rob all the others so much, that when a tree is weak, the upper parts of the horizontals are thereby killed or much weakened; but in May it may be easily discovered what progress each bud is likely to make, and if many of those which were designedly left on be weak, having put forth but a few small leaves, or none at all, then if there be a few strong ones proceeding from the horizontals, the ends of those new-made branches

branches should be taken off, to about three or four inches in length; this will occasion two or three to put out which will be less vigorous, and may in time become bearers; but if all or most of the buds upon the horizontals have put out, then let the strong branches continue till Midsummer, when a better judgment may be formed, whether they ought to remain, be taken out, or shortened; for if, at that time, most of the other buds upon the horizontals have made shoots to the length of six inches or more, and those at the top of the stem have shot forth a foot or half a yard, then the long branches upon the horizontals may be left growing; for taking them off will cause the others that are designed for bearers to shoot too vigorously; but that the tree may have a better appearance, they may be either cut to eight or ten inches in length, or nailed to the wall in such places where they will not deprive the others of the sun or air; but they must be taken out in the winter; except they be wanted to make good some deficiency near the places whence they proceed from; those also that shoot from
the

the extremities of the horizontals should be nailed upright, to prevent their being injured by the winds.

I have not directed what should be done in May, to the buds left in the spring on the upper end of the stem at the point B; if they put out vigorously, let them all remain, but if they be weak, take all off but the strongest: sometimes it happens that they all put out strongly with collaterals of various lengths; in such case they should not be cut out in the summer, but nailed up to the wall to secure them from the winds, and so remain till November, or either of the two months following, all which are proper seasons for pruning, which I will now treat of in the next chapter, and shall refer to Fig. 5. which is the same with Fig. 4. when cut and nailed a year after transplanting.

C H A P. XXXVII.

Pruning and Nailing a Pear-Tree upon a free Stock the second Year.

THE stem in Fig. 5. marked D at the upper part, is left uncut, but nailed with turnings as it appears; my reasons for so doing is to procure collaterals from it of a proper length for horizontals, and in proper places, i. e. at just distances from each other. I have said before, that they should be no less than 12 inches apart. Those parts of the stem which lie flat are most likely to produce shoots from their buds; and when they put forth rub off all others, but those that are about twelve inches above each other on both sides, and the same distance from B: now had this stem been nailed upright at the same, or any other length, it would not have put forth shoots fit for horizontals at any other place but the extremity. Another advantage attends this method; for when the tree is full grown, and has born, and those branches are part of them cut off,

then the flat parts of the stem will produce young branches, which if laid horizontally will produce bearers.

When a shoot produced at B is not much more than two foot long, it may then be deemed not strong enough to produce more than two or three branches fit for horizontals, and ought to be cut about two or three inches higher than the places where the horizontals are required ; but when a shoot is three or four foot long, then it may be supposed strong enough to produce more shoots, and by the turnings, as from B to D, they will be at the places desired.

Tho' I have only shewn one strong branch in this place which is nailed up for a stem, without leaving any of the last year's shoots, but only two that are too short for horizontals, yet when there are shoots of about a yard long or more, in those places where horizontals are required, they ought to be nailed as A and C are in Fig. 4. though at proper distances from them, suppose they either proceed from the buds left at B, or if they be collaterals from one of those shoots.

But when there is not one shoot proceeded two foot long or more from any of the buds left upon the stem B, and if there be any of that length proceeding from the horizontals near the stem, then let one of them be nailed up as that is from B to D in Fig. 5. and if the horizontals have produced none fit for the purpose, the best use must be made of those weak branches which have proceeded from the buds left at B; i. e. let all the branches except one be cut off, and that which is left must not exceed the length of six inches when cut; then let all the buds but the three uppermost be displaced, and ordered in summer as directed for those at B in Fig. 4. by which it will be encouraged to make the stronger shoots. If there be only one shoot, and that not six inches long, let it remain, only rub off all the buds, except the upper one. If the stem B was dead down to the place where the horizontals put out, let one of those shoots proceeding from either of the horizontals be nailed in an upright position, and let it be ordered as is directed for others which are made use of for stems,

according to its length. As those two branches made from B want length for horizontals, they ought to be cut off about six inches from the stem, and their buds all taken off but the uppermost, by which they will make longer shoots the next year.

I come now to the horizontals A and C, which must be examined to find whether they be both alive; and if there be one dead, another must be procured some way or other, either from the stem or from the other side. If the stem be well furnished at top with shoots of a proper length for this purpose, they ought to be longer than those that grow straight from the stem without turning; let one be turned down to the place where it is wanted, but let that part of it which is brought downward be kept as near the stem as may be, till it is brought to the place for which it is designed; but if this can't be done, a shoot must be taken from the other horizontal; if there be any of a sufficient length, and if a horizontal can't be gained by either of these ways, the first opportunity that offers in the summer following, must be made

made use of in order to gain one, or else bring the stem to a horizontal position, and recover a new stem from the first shoot that offers.

If both the horizontals are dead, others must be brought to their places from the parts above by the sides of the stem, as before directed when one was wanting, or else bring down the stem for one, and make one of the young branches the stem.

But let both be supposed to be alive, and to have made shoots nearly like those in Fig. 5. the first thing necessary to be observed is their extremities, which I before directed to be nailed more upright than the other parts, in order to promote their shooting out to a greater length; but if any of the collaterals near them is shot out to a greater length than they, so as to extend itself farther on the wall than those in a horizontal position, let their places be changed; that is, let the long shoot be laid horizontally, and that which was the horizontal before remain for a bearer. What the horizontals have increased in length this year, must be nailed in the same

position as those of the last year, along the same course of bricks, &c. What these horizontals are supposed to have encreased in length in one year, is between A and E on the one side, and between C and F on the other. When trees have shot out strongly, as this is supposed to have done; the less they are cut before they bear the better, for by cutting short nothing more is gained than a greater number of shoots too near each other, and too vigorous for bearing; and sometimes it causes the collaterals that proceed from the horizontals to make shoots, which collaterals would otherwise have produced blossoms in a year or two.

I have directed before to nail or cut such collaterals as might happen to be of too great a length; but now, at this time of winter-pruning, it ought to be considered what length they should be left at, most proper for bearers; for several kinds of pears produce their fruit upon studs, or branches, of different ages and uncertain lengths: so that if the collaterals proceeding from the horizontals be almost equal in length, let them all remain; and let the
hori.

horizontals be placed about two inches farther from each other than the length of these collaterals which proceed from them: but when the latter are very unequal in length to each other, it is difficult to dispose of them, for if the longest be taken out; it may perhaps cause the others to put forth shoots; and if they are naturally placed almost all together, when they are taken away, that part of the horizontal will be left naked.

The method by which I order them is nearly like that which I use for the stems; I turn as many of them as room will permit, either above or below the horizontals to which they belong, as one may be seen at G, Fig. 5. which might have had more turns, if the length had required them. If there be not room enough sufficient to turn them all after the same manner, let those that remain be taken out, and let not any part be cut off from these horizontals and branches which proceed from them in the summer following: those that are intended to lengthen the horizontals must be several times nailed up to the wall, in manner directed for others the foregoing summer.

I now return to the stem that was nailed up with all its buds on, the last winter, from B to D. When the buds are about an inch long, 'tis time to rub off all those that are not designed for horizontals; and the same work must be repeated so often in the summer as there is occasion. There must be a space of twelve inches between the buds that are left, on one side of the stem, and they should be left on both sides at that distance; and as they shoot forth, nail up the branches as before, to prevent their being broken by winds, but let nothing be cut off till the next winter, at which time the pruner must so dispose of the shoots that have been made the foregoing summer, as to form a tree in shape like the lower parts of Fig. 6. and if the young tree is healthy, it may possibly cover the wall in six years, and the owner have tasted the fruit produced from some of the lowermost branches in a shorter time.

I hope the foregoing reasons and directions which I have given concerning pruning, will be satisfactory to every intelligent reader, and will enable him to bring

a strong young tree to the shape of Fig. 6. in the time proposed before.

Note, Those trees which have been trained up in the nursery, by the former directions, to a shape nearly like Fig. 5. in this plate, are at the time of re-planting, and afterward, to be treated in the same manner, with this precaution only, that is, to cut off more branches at their removal, by reason of their loss of roots.

C H A P. XXXVIII.

Pruning and Nailing Trees planted with one or two healthy branches.

AS what I have said in the preceding chapters concerning pruning, was only with regard to a tree taken from the nursery, with three branches or more, I shall now speak of the pruning and ordering of those which are brought from the nursery with only one or two branches. Let us suppose then that a tree has two healthy branches, each of them a yard in length, or more, if the stronger of them be laid horizontally, as A or C, in Fig. 4.

it will bear sooner than if they had both been cut; and the earlier it bears, the sooner a gentleman knows how he has been used by the nurseryman; for if the tree be of a bad kind, the sooner it is changed the better, either by planting a better in its place, or by grafting upon it the kind required: but as I have directed one of the branches to be left whole, the other must be cut to such a length, that there may be four or five plump buds left at its top; all the lower buds must be rubbed off, and afterwards let it be ordered according to its strength as Fig. 4. in the two last chapters.

If a tree has only one strong branch, and no more of any sort, then it must be cut and ordered in every respect like that left for a stem in the last; let the shoots be nailed to the wall in the summer; and if there be three or more of them, when they are about a yard long, place two of them as is before directed, but that which is intended for the stem let it be kept nailed upright, till the season for winter-pruning, and then let it be ordered by the rules given for others of the same shape and strength.

C H A P .

C H A P. XXXIX.

Pruning and Nailing of young Pear-Trees
that are weak upon Free-Stocks.

IF trees be weak when taken from the nursery, or are become so after transplanting, the method which is both taught and practised for their recovery, is to cut their branches short and in proportion to their strength. But I think the shortening of branches only is no great help to them, as it may occasion a greater number than there was before to shoot forth; for it may reasonably be expected, that there will two, and sometimes more, proceed from each that was cut; but if one shoot only proceed from each branch, they must consequently be the stronger, for the same quantity of sap is collected by the roots, and conveyed through the vessels, to those buds that are adapted to make shoots, and the fewer the buds are that receive it, a greater quantity must certainly enter into them, and by it larger shoots are formed; for if the same quantity of sap, that
enters

enters only one bud for the production of a shoot, is received by four buds, the four shoots that proceed from them will be of a less size in proportion to their number.

A weak tree is to be improved by nailing; for according as it is performed, it contributes either to the strengthening of a tree that is weak, or to its continuance in the same condition; for the more erect the branches are placed, the more easily does the sap pass to their extremities, and there forms much stronger shoots than when they are placed horizontally, for then the sap pushes almost equally at every bud on the upper side of the branch, which renders the shoots proceeding from them weaker in the same proportion as their number is to one. But to nail upright and displace useless buds, are the best methods that I am acquainted with in pruning, to procure strong shoots from weak trees, which are the chief things to be obtained in order to form such as the Fig. 4, 5, and 6. for they all represent a strong tree of different ages; and if all the former rules be observed in preparing soils, taking

taking them up, &c. strong and healthy ones may be obtained.

C H A P. XL.

Shewing the different advantages arising from the several ways of Pruning young Pear-Trees upon Free-Stocks.

I Have in the last chapter shewn my method of pruning and nailing young pear-trees upon free-stocks, which as it is very different from what is generally practised, I shall here give my reasons for it, and shew the many advantages arising therefrom, more than by the customary methods of cutting short; and begin with the two trees newly transplanted, represented by Fig. 2. and 4. the former ordered after the customary method, the latter, i. e. Fig. 4. after mine. I believe it will appear strange that in Fig. 4. I left two branches uncut, but nailed horizontally. But if it be demanded why they are not cut and nailed like the second figure, I answer, that by nailing the two branches A and C, as in Fig. 4. I propose
to

to have blossoms and fruit earlier by a year than if they had been cut as in Fig. 2. for pear-trees always blossom at the end of a shoot, or upon studs that put forth collaterally near those parts which were once the ending of a year's shoot; but as the Fig. 2. is cut, the extreme parts of the branches are taken away, and the buds that are left on at A, and C, after it has been planted a year, produce such shoots as are shewn in Fig. 3. Fig. 4. after it has been planted one year becomes a tree like Fig. 5. and some kinds of pears will blossom at that age.

But Fig. 3. representing a tree cut after the customary manner, and if planted at the same time with Fig. 5. will have made but few other sort of shoots than those left upon Fig. 4. at the time of planting, and no nearer blossoming; by which it plainly appears, that different ways of cutting trees make at least a year's difference in their bearing, and that such as are prepared in the nursery have a year's advantage of others.

If any person is not satisfied with what I have said, I desire him only to make
trial

trial upon part of a tree, by which he may discover whether what I have asserted be true or false.

Trees that are ordered as is shewn in Fig. 4. till they become like Fig. 5. and 6. are earlieft brought to bear, and their sap is spent in usefully supporting their fruit, &c. but in Fig. 2. and 3. it forms many shoots in the summer which are cut out in winter; let any man therefore judge which method is best to be practised, whether to procure fruit upon a young tree, or luxuriant branches to employ the knife upon.

I aver that a tree nailed by my method, shall constantly produce a third part more of good fruit, than one that is cut short and nailed like Fig. 2. and 3. for the latter are generally nailed to the wall in shape of a fan, by which some of the branches are placed almost perpendicularly; so that all the middle of a tree has no other but strong barren branches in it, and its blossoms are only at the extremities of the lower ones, and the middle parts put out in summer strong shoots to be cut out in winter, according to the annual customary method

thod of disposing of sap; but on a tree like Fig. 6. there will be both blossoms and fruit near the stem, as well as upon the extreme parts.

It may be said, when a tree blossoms and bears so early, it thereby becomes weaker; but if it is strong enough to produce shoots of the length I have mentioned, before they should be laid horizontally, the tree is then sufficiently strong, and when it does not produce such shoots, I do not suffer it to bear at all; but when a tree would be too vigorous without bearing, it is then of service.

I have seen trees bear soon after planting, without putting forth any shoots, which was only owing to short cutting; for instance, when a tree is taken from the nursery with branches of more than a year old, then the lower parts of its arms or branches have few or no buds upon them for the production of shoots, but studs prepared for blossoming the next year, or in a few years after: now if this tree has its branches cut to the length of ten or twelve inches, according to custom, those parts of the branches which remain
are

are more than a year old, having no buds naturally prepared for the production of shoots, but buds only which blossom and bear one or other of them, for two or three years, without making any considerable shoots, which is often the case in standards; then a tree is said to be weak.

Sometimes a tree planted with shoots on it of one year old, which have buds that seem likely to produce shoots, may nevertheless produce but weakly ones the first year; and if too many of them be left on, and cut short without disbudding, the tree will remain in a weak state, tho' in a few years it will yield fruit, but not so good as others whose shoots are of the length I have directed, before they should be nailed horizontally in order to put forth bearers.

If an early bearing tree be cut as I have directed, it may produce both fruit and proper branches, admit part of the last year's shoots be left at full length, and part of the buds on the others displaced; for then the remaining buds will form shoots, and if part of the studs or bearers be taken off, the shoots will be the stronger.

C H A P. XLI.

To prune a full grown Tree, so as to make it bear good Fruit in the largest quantity.

IT should first be considered what state of health the tree is in, whether it be too weak, too strong, or in a proper state. The symptoms of weakness are, bearing or blossoming much, and shooting but little. Those of strength and a proper state may be known by the following directions, viz. if a tree shoots much, and blossoms but little, it is too luxuriant or too strong, admit the shoots it makes be healthy and free from canker at their extremities and all other parts.

When a tree shoots strongly, and bears a plentiful crop of large fruit, it may be judged to be in a proper state of health. Let us suppose, that one of these healthy trees be in shape like fig. 6, and begin with the management of it in May, after it has been winter-pruned, and made new shoots, then it may be discovered what quantity of fruit it will bear. If there be
an

FRUIT-TREES. 129

an appearance but of a small crop, then fewer of the new made shoots must be taken off, than when the crop is large; for when a tree is in health, and has but little fruit upon it, as it sometimes happens, after violent frosts in the spring, then it is often too vigorous; if there be too many of the useless branches taken off, several of the studs will make shoots, which otherwise would have produced blossoms the next year, for in healthy trees the sap will discharge itself into shoots through one part or other.

What I mean by useless branches are such as put out from the stem in such places where horizontals are not wanted, and such as proceed from horizontals, which by their strength seem as if they would shoot to too great a length for bearers.

All branches that proceed from the stem should remain, for they cannot over-shadow any of the bearers; if they be kept tied or nailed upright, these I call waste-pipes, all the other useless branches that proceed from the horizontals, when they are grown so long as to shade the bearers, must be cut to the length of about nine

K

inches,

inches, for if they are cut at that length, they will make autumnal shoots, by which the sap will be discharged without forcing the extreme parts of the bearers into shoots.

But when a tree bears plentifully, and shoots strongly, it requires a quite different management in the summer, for then all the useless branches, which proceed from the horizontals, must be cut close off from them; by this method the size and goodness of the fruit will be improved. It is customary with some to cut these branches to about three or four inches in length, but this kind of cutting occasions a greater number of branches, which are so near each other, that much the greater part of them never blossom, for want of sun and air, but they put forth shoots which are cut twice or thrice a year in the same manner, so that they resemble besoms rather than the bearing parts of fruit-trees, and what little fruit they produce is not good, being generally small and cracked.

As some parts of the stem are in an horizontal position, being turned in that manner, in order to procure new horizontals from them, to furnish the tree with young bear-

bearers, they will be apt to put forth shoots every year ; therefore when a tree has a good crop of fruit upon it, and shoots proper for new horizontals, then part of the old studs that are near the stem, and barren, ought to be cut out, after they have once born, in order to make the fruit larger, for old studs that have born several times never yield so good fruit as those that are young ; so in this case, it is proper to take out the old ones that the fruit may be the better fed.

Let all branches which proceed from that side of the stem next the wall be taken off, for they are too watery, and were they to be laid horizontally, their collaterals would be very far for blossoming.

Let no other young shoots be left upon it than such as are designed for horizontals when wanted, which ought to be kept nailed upright to the wall, at several times in the summer, lest they be broken by winds ; let all others be rubb'd off as they put forth, especially those that break out on the fore-part of the stem, and if suckers put out at the roots, let them be dug up.

If a tree has not made many shoots before the beginning of June, it is then too weak; and if it be very full of fruit take part of them off, for a small number of large fruit is equal in weight to a greater number of such as are small, and the flavour of the former greatly excels that of the latter.

C H A P. XLII.

Winter pruning and nailing of a Pear-tree, upon a free stock, when it is full grown, as in fig. 6.

THIS work may be done from the beginning of November to the end of March. A weak tree ought to be done first, and much thinned in the winter, by taking out part of the bearers; for in a weak tree there are no more young shoots left in the summer, than what are designed for new horizontals, which being laid in their proper places, as D, in fig. 6. then the greatest part of those old studs upon the horizontals nearest them must be cut off,

off, otherwise they would too much shade the new ones.

It may be easily perceived what buds will produce blossoms; they are more globular than others, and in this case, they only should be left on those parts of the old horizontals which are nearest the stem, where the young horizontals are interlaid; but near the extremities of the tree let all collaterals remain that are not too long for bearers, suppose the buds are too young for blossoming, as may be perceived by the shape and size of them.

If there have been young horizontals laid in two or three years before, which are extended nearly to the greatest length allowed them, then the old ones nearest them may be taken quite away; except they are likely to bear, and the young ones are not.

Every branch, &c. taken from a tree, must be cut off close to the part from whence it proceeded; for when stumps are left, they are apt to produce a number of useless branches.

'Tis very improper, when trees appear too vigorous, to leave their branches of any kind too near each other, for if they are,

they will shoot more in length than otherwise, and be more backward in blossoming, to which they ought to be brought as soon as possible, for nothing checks the vigour of trees more than bearing.

Those parts that are designed for bearers should be nailed depending about six inches apart. If there be too many, let the worst be cut out ; and if any of them be longer than the space between the horizontals, let them be turned like the new stems in this plate.

If there be room upon the walls, let the horizontal branches be continued, till they nearly touch the other trees, then let them be turned downward, as E in fig. 6. to the middle of the spaces between them, and let them be then nailed horizontally towards the stems. I have obtained good fruit by this method.

If there be any branches which were cut the last summer to about nine or ten inches long, let them be taken quite out, otherwise they will produce new ones, and shade those that are preparing blossoms ; but let as many as possible of these branches which proceed from the stem, and were nailed up
in

in summer, continue, and let some of them, i. e. the strongest, grow above the wall, but they must be nailed near the top with strong threads, lest the winds tear down the whole tree. The cutting of such trees should be deferred to the latter end of March.

By these means a vigorous tree will bear, and then those branches that were left for waste pipes upon the stem, or other parts, may be taken out, for the sap that supported them will be wanted in the fruit.

When a tree is come to a state of bearing, it is not proper to let too much wood remain in the winter: all those parts of the bearers that produced fruit the last year should be taken out, and none left but such as will immediately blossom, or such studs as are too young; and if there be room, let new horizontals be laid, for those that are young will afford much the largest and best flavoured fruit.

It is not the great age of a tree which renders the fruit bad, but the age of those parts of it on which the fruit grows; neither when fruit is not good, is it always owing to the season, climate or soil, or its own natural bad qualities, for I have seen

and tasted both good and bad pears which grew upon one and the same tree, though in different parts of it, so that no kind of pears ought to be condemned, till the tree be observed, and the soil and aspect in which it grows.

C H A P. XLIII.

Pruning of a Pear-Tree on a Quince Stock.

THE management of a pear-tree upon a quince stock, differs but little from that of others; the length of the horizontals and their distance from each other should be about a third part less than those upon free stocks, whether they be against walls or espaliers.

They are more proper for espaliers than those upon free stocks, because they don't grow to so great a height, by which they are less subject to be broke by the violence of the winds.

When these trees are dressed in the winter, if the extremities of the shoots be cankered, let as many of them be taken out as can be spared, and the others cut somewhat below the cankered parts.

When

When any of the horizontals are cankered, take off the rind as far as the quick, and let all the moss be clean scraped off, both from them and the stem; which may best be done in wet weather; but if the weather is dry at the time of dressing, then moisten the trees well with netting or brine, and when the moss is all taken off, wash them again with the same sort of liquor, which will prevent moss from growing upon them for the future; by this means the eggs of caterpillars concealed in the cavities of the old bark, are in a great measure destroyed.

When a tree is too weak, sometimes it may be strengthened by raising earth about the stem above the place where it was propagated upon the stock; for the upper part will make roots into it, which may either be destroyed after, or continued, according as the strength of the tree requires: I have found this method very serviceable in preventing shoots from cankering at their ends, and the fruit from being stony; which often happens upon quince stocks.

There

138 A T R E A T I S E O F

There are some kinds of pears that are much shorter shooters than others; when these are propagated on quince stocks, and planted with only one stem against a wall of the lower sort, before they can cover the space designed for them, the studs and bearers nearest the stem will be of too great an age to produce good fruit; when this happens, the tree should have two stems like a peach, and thereby the bearers may be kept properly young. If one side of the tree be weaker than the other, they should be cut as two separate trees according to their strength; this will occasion one side of the tree to be lower than the other, but it is better to have branches of equal and proper strength, though the sides of a tree be unequal in height, than to have the fruit on one side much inferior to that on the other in goodness.

C H A P.

C H A P. XLIV.

Observations on old Pear-Trees, and others that are not in good order, and how they are sometimes extravagantly thrown away.

WHAT I have said before upon pruning and nailing of pear-trees, only relates to such as have been planted no more than five or six years; but older trees are many times capable of being improved, tho' I have known some gentlemen been persuaded to throw them out, and plant young ones in their stead. Nay, I have lately seen young trees planted between old ones that actually stood too near each other in an espalier: this I count a worse practice than the former; for the young ones were hindered from thriving by the roots of the others, and likewise by the branches hanging over them.

The reasons given for destroying old trees are generally these two, viz. the one for not bearing good fruit, and the other for bearing too little or none. But before
I pro-

I proceed any farther with the ordering of old trees, I must beg leave to shew some reasons why the natural qualities of fruit are often mistaken, and called bad, tho' of the best kinds. I have known the virgouleuse, colmar, and winter bon chretien, called and esteemed only fit for baking; this was owing to their not being palatable in the summer or autumn months; and sometimes good sorts are deemed otherwise, when a tree is too full of old studs.

When good kinds of fruit are thus falsely condemned, I look upon it to be owing to some part of the great number employed in pruning; many of which have only served an apprenticeship to a market gardener, whose employment was only in raising common kitchen stuff; for there are several youths, during the whole time of their seven years servitude, never have an opportunity of knowing any thing of choice fruits, but are kept to hard labour in the kitchen garden only, and may undoubtedly know that branch of business extremely well; but, after their apprenticeship is ended, are desirous of going into a gentleman's service, and knowing that they

they shall be well maintained, are content to serve for small wages ; (which makes others less esteemed, whose skill and understanding is much superior, because they expect better pay, and perhaps are less laborious in digging, &c.) Such young men are very proper servants for those gentlemen who are skilled in gardening, and chuse to give directions, but not for such as do not understand it, or will not be at the trouble of directing ; tho' many are desirous to hire their servants as cheap as possibly they can.

I am much against destroying of old trees if they be tolerably healthy, because the planting of young ones in a proper manner is expensive, as old borders for that purpose ought to be trenched all over ; and after that is done, admit the trees thrive well, they can't be brought to bear a large quantity of fruit so early as the others.

If an old tree be of a good kind, it may be brought to bear good fruit by the rules I shall hereafter lay down for pruning ; admit the soil it grows in is suitable ; and if not, it may be improved by the
me-

142 A T R E A T I S E O F

methods prescribed for making and ordering of borders.

If an old tree is of a bad sort, I would have it grafted in several parts with any sort desired, whereby it will cover the wall again sooner than one new planted; and the owner will be certain of the right kind.

This may be practised either upon wall-trees, dwarfs, or espaliers, admit they are either upon pear or quince-stocks; and apples may be ordered the same way either upon the crab or any other sort of stock.

If the plum, or cherry, are good sorts, and bear but little fruit, they may be helped in the same manner as pears; but if they are of a bad sort, I would not have them grafted, except they are found at the heart, as but few old trees of these kinds are; and when this is the case, 'tis much better to take them away, and plant others in their stead. Though 'tis observed by many, that young trees will not prosper in the borders where others of the same species have lately grown, yet I have found it otherwise; and those who have a mind to try, I would advise them to mix the soil
of

of the borders in the summer, with those ingredients I have prescribed for improving borders, that the salts contained in them may be sufficiently diluted before the trees are planted.

C H A P. XLV.

Pruning of old Pear-Trees in the summer,
that have not been regularly trained.

I Have seen some few old pear-trees, with their branches laid level, though their horizontals and bearers have seldom been renewed: but their collaterals have been stopt till they have formed a large and useless bush, as I have mentioned in other places. The form of some other old trees is meerly accidental, but generally furnished with bushes like the former.

I have had the management of both, and in two years time have brought some of them to bear good fruit; and in three or four, plentifully, with their branches in a tolerable shape.

Having said thus much concerning the ill shapes of old trees, I shall now shew how
to

744 A TREATISE OF

to prune and nail them. Suppose this work of pruning is begun in May, and there is a large crop of fruit, then take off part of it, and all young shoots, except those putting out of the extremities of the old horizontals and irregular ribs, or such as grow from the stem, or other parts where they may be disposed of for horizontals, which should be nailed up till winter; and take off such parts of the bushes as would shade them; and if many others be taken off, the fruit will be much larger and better for it.

If a tree has but little fruit upon it, shoots must be preserved near the stem for horizontals, as before directed, and also those proceeding from the extremities; and if there are any vigorous shoots, they must be shortened to about six inches long, and left till winter.

C H A P. XLVI.

Pruning of old Pear-Trees in the Winter,
that have not been trained up regularly.

WHEN old trees are vigorous, and the space of wall assigned for each is not sufficient to contain their branches, when properly extended, take away every second or third tree according as room is wanted, before their winter order is given them; and then it may be the better known how to manage those remaining. And first, where the old branches are placed horizontally, lay the new ones left in the middle of the tree in that position between them, as before directed; but if the old horizontals are too near one another, and the tree not vigorous, part of them may be cut away to make room for the new ones; as also such bushes as would shade the young horizontals. There should be nothing left in these places but what will blossom that year, neither too many buds for that purpose.

L

Those

Those young branches left at the ends of the horizontals should be extended forward, if there is room; if not, they may be turned and disposed of as directed at E. in Fig. 6. and the bushes growing near them should be thinned, to prevent them from shading the branches from the sun's rays.

If there is not a sufficient number of new horizontals, take pieces out of the sides of the stem where they are wanted; for by cutting the tree in this manner, young shoots will grow near the parts cut, both above and below.

Such trees as have neither stems nor horizontals regular, must be managed so as to have both produced from new shoots; the strongest shoot in the middle of the tree, and nearest the bottom, should be left for a stem, and turned as in Fig. 5. the old branches will doubtless be in its way, and to nail them across one another is very improper in regular trees, but as it can't be well avoided in this case, let it therefore be nailed and placed over or under the old branches as is most convenient, and the best of the old branches laid horizontally a foot asunder at least, and all the worst
I should

should be cut out, and such as grow the most contrary to the shape desired, and likewise old studs that would shade the new horizontals. This work should be repeated annually as the new stem, and the horizontals proceeding from it, increase in length, till they form a tree as regular as the sixth figure, which may be performed in a few years, provided they are ordered like those of a young tree. When a large branch is taken off, it must be done close to the part it grows from, and made smooth with a sharp chissel, then covered over with pitch and rosin of each an equal quantity melted together, and left as much reclining as possible to prevent its taking wet. What I have said upon wall-trees of this sort, I hope will inform any one how to improve dwarfs, &c. either of apples, plums, or cherries.

C H A P. XLVII.

Pruning of Mulberry-trees against Walls.

AS mulberry-trees are sometimes planted against walls, and by that means made to produce excellent fruit, I think their nature of bearing ought to be observed, and the manner of pruning and nailing. They produce their fruit at the lower end of a new-made branch, that is, the fruit and branch that bears it are both of the same year's production; but these branches don't grow that year from the rind of either stem or horizontal, but from buds near the extremities of branches made before. By these remarks, it is plain they will not bear till the studs be more than a year old, without having their ends cut off; for shortening the studs often causes them to put out too many shoots, and too strong for bearing, and so near one another that they can't receive proper support from the sun and air. The figures in the third plate will serve very well for specimens to direct the shape of a mulberry-tree

tree by, and the manner of pruning is the same as for pears upon quince-stocks, and planted the same distance from one another; tho' in time they will become large trees, and then more room must be given them.

C H A P. XLVIII.

Pruning of Currant-trees.

THE method of pruning a currant-tree planted against a wall, is much the same as for the last, only that currants don't require above one fourth of the wall allowed for mulberries: they produce their fruit upon studs of four or five years old, but that upon collaterals made the year before is the largest and best. By taking off the old studs, young ones are recovered in the same places, provided the old ones are not cut off too close to the horizontals; and if the horizontals be renewed when three or four years old, the fruit will be much larger than those upon the old parts of a tree.

C H A P. XLIX.

Pruning of Apples upon Paradise-stocks.

AS apple-trees are sometimes planted against walls, and will bring their fruit to perfection upon any aspect, I will here give directions for pruning them. Some kinds of apples, especially the non-pareil, will sometimes bear a small number of fruit upon young wood, or shoots of the last year's production ; but they generally bear most upon studs proceeding from branches of two, three, or four years old, in the very same manner as pears, whose management has been largely treated of before.

What has been said concerning pears upon quince-stocks, as to their distance from one another, and the manner of pruning and nailing them, and dressing the cankered parts, are the best methods I can give for apples, and therefore need not be again repeated.

C H A P.

CHAP. L.

Pruning and Nailing of Cherries against
Walls.

THE seasons for pruning and nailing of stone-fruit, are December and January, or the beginning of February. Cherries of different kinds require different ways of pruning and nailing, by reason they bear their fruit upon wood of different ages; the morella and baremdam bear most of their best fruit upon the extremities of the last year's shoots, and should therefore be cut and nailed every year so as to procure a succession of them: the rules for that purpose are given in pruning of peaches; but the bearers of these need not be nailed to the walls as those of peaches are, tho' the stems and horizontals must, to prevent the winds from breaking them.

The little May cherry is not much unlike the former as to its nature of bearing; but the small bearers of this should be

ailed to the wall, to forward the ripening of the fruit. When these three sorts of cherries are planted against low walls, so as that their distance from one another is more than ten feet, each tree should then have two stems.

All other kinds of cherries that I am acquainted with bear differently, for they produce the most fruit upon studs proceeding from wood that is two or three years old, or at the lower ends of the last year's shoots; though they are often suffered to have studs much older, which will blossom and bear, yet the fruit is never so large as the other. The rules laid down for pruning and nailing pears upon quince stocks, will serve also for these sorts of cherries; with this difference only, that the horizontals of these must be laid at distances from one another, according to the size of their leaves, which will be seen before new horizontals are fit to nail; the distance from one another may be allowed from eight to twelve inches. In nailing these or any other kinds of stone fruit, take care that the rind be neither galled nor bruised

bruised by either hammer or nail, for this will cause gum to issue out from the wounded part, which either kills or weakens the branch it proceeds from. I have, in the former part of this volume, assigned the space of wall proper for cherries, but the distances from each other are various, according to the heights of walls; and when they are planted twelve feet or more asunder, they should have two stems, for reasons before given concerning pears upon quince stocks. The cornelian cherry is generally planted a standard, and when it is not too much crowded, will bear fruit, but not so good as when cut and nailed by the rules given for the morella.

C H A P. LI.

Pruning of Plums against Walls.

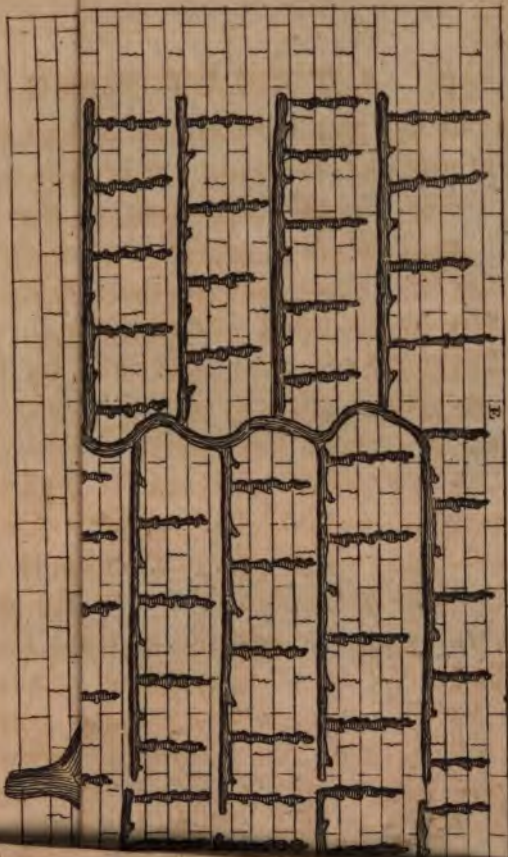
THE best kinds of plums are, in their season, as noble fruit as any our climate produces, and they well deserve a good wall; but without proper management by pruning and nailing, they are often very bad, having but little pulp, and that

that not much better tasted than the gum issuing out of a wounded branch. Weakness is generally the cause of this imperfection in the fruit, either in the whole tree or else in part thereof, occasioned either by its being wounded, or the bearers being too old, and sometimes by bearing too great a quantity of fruit, either on the whole tree, or some particular parts.

I have often observed, that plum-trees produce the best fruit upon the youngest bearers; except too great a quantity is suffered to remain, without being properly thinned; which should be done about the latter end of May, by taking off the smallest with the point of a sharp knife. By these observations, I find it best for the procuring of good fruit, to keep the horizontals and bearers young, and likewise thin the fruit when there is occasion: but when there is a weakness proceeding from the root, it should be relieved by the methods prescribed for managing borders.

As to what is required more in the pruning of plum-trees, may be learned from the rules laid down for pears upon quince stocks, or for cherries in the last chapter.

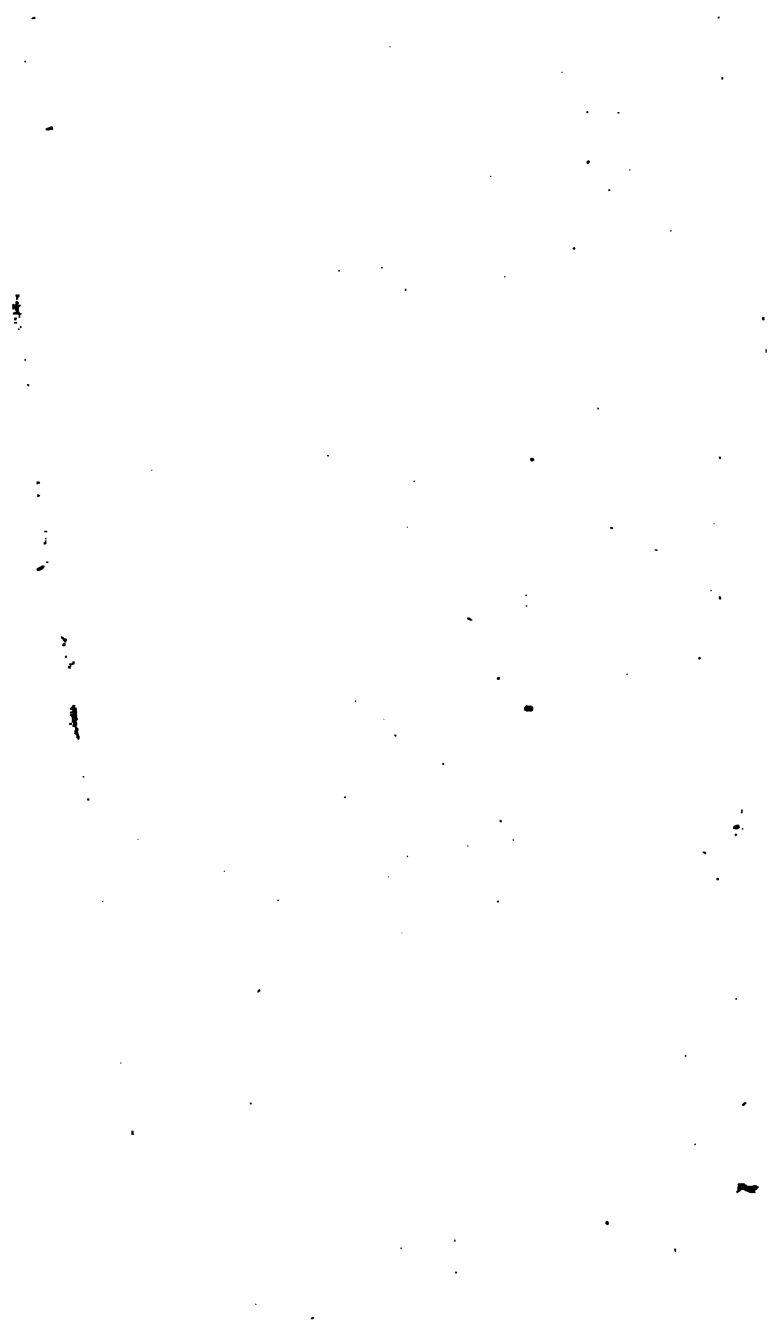
C H A P.



B.

Fig. 6.

Fig. 5.



CHAP. LII.

Explanation of the fourth plate.

THIS plate represents either a peach, nectarine, or apricot-tree, at different ages.

Fig. 1. is one taken from the nursery.

Fig. 2. is the same cut, according to custom.

Fig. 3. is the same as Fig. 2. with the branches it may be supposed to have made in one year.

Fig. 4. is the same as Fig. 1. when cut and nailed after my method.

Fig. 5. is the same as Fig. 4. after it has been planted one year. On one side of this tree there are all the branches it was suffered to make; on the other side it is cut and nailed for the winter order.

Fig. 6. is a tree full grown.

I have before explained what parts of a tree are called bearers, horizontals, and stems, and need not repeat it: but in these there are two parts that produce horizontals; these I call stems, though there was only

only one in some of the last, which was advantageous in pears, plums, &c. as I have already demonstrated under the head of pruning pears.

C H A P. LIII.

On Pruning and Nailing a Peach-tree at the time of Planting.

AS peaches are naturally inclined to produce their shoots in an erect position, and after their branches are laid horizontally they grow very little more in length; so if there had been but one stem, the length required for each horizontal, would have been greater than any shoot of one year's production would reach (except the distances betwixt the trees be much less than twelve feet): and as these shoots increase but little in length after they are so laid, then consequently part of the wall must be naked, if there was only one stem; but by having two, the lengths of the horizontals required are but half as much as they would have been, had there been only one, where the spaces are the same

same betwixt each tree; but where the walls are of much greater heights than twelve feet, then the distance betwixt each tree must be less, and one stem will be more proper than two; for the spaces being so little, the horizontals would be short, and consequently cause their collaterals to be too vigorous, by being few in number upon each.

The properest time for winter-pruning of peaches, &c. that have been planted the same winter, is in February; for then a better judgment may be formed of what parts are dead, &c. as I have before observed, just after the rules for planting.

The season for the winter-pruning of such as have been planted one year, or more, is December and January, (if they be either weak or strong) for before the beginning of December they have but seldom shed their leaves; and before they do that, it shews that the sap in them continues liquid, and their pores are more open than they are immediately after the leaves drop off. As there is always a necessity of taking out some wood in the winter, it is most proper to do it at such time as its
parts

parts are most compact, lest too great a quantity of aqueous particles enter into those parts of the trees where the amputations are made. In February there are visible proofs of the sap becoming more liquid than it was in January, by the buds being increased in bulk. This shews that the vessels are more extended than when the buds were less, as at the time their leaves were newly shed. It is observed by many practitioners, to cut the strongest trees latest in the spring, in order to abate their vigour; but it is an unprofitable custom, especially when the trees are young and the walls covered but in part, for then trees of those kinds cannot be too strong, if rightly ordered by disbudding in spring, and properly displaying their branches at all times of nailing; then the new-made branches will blossom the next year, from trees that are the most vigorous. A great disadvantage attends the cutting of trees too late in the spring, or when their blossom-buds are either open or near it; for then they are in danger of being displaced more than when they are less. Upon a strong tree there cannot be too many buds; for,
by

by blossoming and bearing, their vigour will sooner be abated, than by taking out or shortening strong branches.

Before the trees are nailed against walls that are not more than twelve feet in height, the space adapted for each tree must be divided into four equal parts; that is to say, two on one side of the tree, and two on the other. At those two divisions next each tree, make marks upon the wall, from the bottom to the top, over which the stems must be carried; as from B to D, and from C to E, in Fig. 6. But the lower parts of the stems, as A B, and A C, must be placed inclining about thirty degrees, if the trees be strong; but if they be weak, nail them more erect, till they produce shoots of a competent strength, then they must be brought lower, to the position before mentioned.

If those parts of the stems A B, and A C, were laid horizontally, they would be apt to put out strong branches from their lower parts, which would prevent the sap from moving with sufficient force to their extremities, so as greatly to increase their lengths; and sometimes they are killed by
it;

it ; for, as I have before observed, their natural shape is much reverse to a horizontal position : and when branches are so laid, they are as much disposed to put forth strong collaterals from their lower buds, as they are long shoots from their extremities ; and when the shoots are many in number, those at the extreme parts must certainly be shorter than if there had been no other but them upon the stem.

It appears by Fig. 4. that I leave the stems, the first spring after planting, of an uncommon length. There are many advantages obtained by this method, more than when they are cut short ; for those branches proceeding from the former will be at a much greater, and a more proper distance from each other ; and a wall may be covered much sooner thereby. The life of a tree also is much safer, by the stems being of such a length, than if they were shorter ; for those buds at the upper end of a branch are always larger, and by the sap's motion easier opened, than the buds at the lower end, which appear less, and are more compact.

By

By short cutting first after planting, I have seen trees killed; and others which have made but very weak shoots, when there were none but small buds left on; for branches are often in such proportion to each other, as the buds are which produce them; but when supplied with a greater quantity of sap, their bulk and length are increased the more. And when, by short cutting, there happens to be any of the larger sort of buds remaining; then a tree shoots very luxuriantly, as it appears by the Fig. 3. whose branches are much too near each other.

When new planted trees are cut the first time, it is proper to examine the upper ends of the stems; and if they be either dead, or appear unhealthy, then cut such tops off somewhat below the distempered parts: if there are no such occasions, there is no need of shortening them; for, on all peach-trees, there are a great number of collaterals, from which a reduction of branches may be made, equivalent to their loss of roots by removal, admit they were taken up, and planted as before directed.

M

Those

Those small collaterals marked EF, GH, that are upon AB, and AC, in Fig. 4. having all healthy buds at their upper ends, are certain to put forth leaves sooner than any other parts of the same tree; and leaves are of great use in vegetation, for they both exhale and imbibe, to the great advantage of those plants to which they belong. When trees were planted early in the winter, I have sometimes gathered fruit from such branches the first year, either more or less, according to the strength of the plant; but it would be improper to suffer so many to remain upon a tree, as would hinder it from making shoots fit for horizontals.

Those collaterals which are taken off, must be cut about an inch from the stem or part they grow upon; then others will put out from buds at the sides of the little stumps that are left, from which there will be an opportunity of choosing branches to remain at the places where desired; but all others ought to be taken off at their first appearance, for at this time of pruning all those buds which put out on the under sides of the stems should be rubbed off,

off, except one at the extremity of each, to make horizontals; and on the upper sides, let four only remain upon each, that is to say, those near B, N, O, I, upon one side, and K, L, M, C, on the other, with one at the end of each to lengthen the stems.

C H A P. LIV.

The Pruning a Peach-tree, the first Summer after planting.

IN the months of April and May, it may be discovered what quantity of fruit the tree is able to support, and what number of branches of proper lengths for the uses intended; if they be weak, displace part of the fruit first.

As to those branches that may proceed from the two lowest buds at I, K, I only design them for bearers the next year, which are not required to be more than a foot in length; but if they shoot strongly, as though they would exceed it, then stop them at the length of two or three inches; but if none of those above are likely to be

two foot long*, then they must remain uncut.

At all other places where buds were left above I K, shoots will be required to make horizontals, and sometimes they will put out collaterals the first summer; but if they are not all able to do it, take part of them quite out.

The principal parts, A B, and A C, must be separately examined, for the thinning of one will not much relieve the other.

If there is a necessity of displacing any shoots, it ought to be those on the undersides near B and C. And it will easily be perceived in a few weeks, whether the reducing of two branches only will give strength to those remaining sufficient for the uses they are designed; if not, then take away either one or both of those branches at L and O, according as there is a necessity.

All fore-right branches must be taken away, or any others that appear useless.

All others must be nailed upright, to prevent the winds from breaking them,

* Two foot, or near it, is the length required for horizontals.

till those designed for horizontals are grown almost to the length required.

The two strongest branches proceeding from B and C, must be preserved for stems, and should be kept clear from all fore-right branches; and when the other strong ones are full eighteen inches long, let them be nailed horizontally, leaving only their upper ends erect, which will encourage them to shoot more in length.

All buds and branches must be taken away from their under and fore-sides, which appear the first summer after planting; and no collaterals should be left nearer each other than the space of three inches.

C H A P. LV.

The Winter-pruning of a Peach-Tree, that is more than one Year old, according to Fig. 5.

THIS figure represents a tree with one side cut and nailed in a manner proper for its winter order; but the other is not, as appears by the side A B having fewer branches upon it than there are up-

on the part A C; for the former has more than one half of its collaterals taken off, about an inch from the horizontals.

My reason for not cutting these collaterals close to the part they proceed from, is to procure a greater number of bearers the next year, there generally being on the lower end one bud, and sometimes more, which produce shoots after cutting.

At this time of dressing, I think it is better to leave the bearers about six inches asunder, nailed in an upright position, with long and narrow threads, for broad ones are apt to spoil the beauty of the fruit, and short ones to pinch the branches.

The upper ends of branches are the most certain to produce fruit, and should therefore never be taken off if alive; for, the upper bud of every healthy branch always puts out leaves, which shelters those blossoms nearest them.

When some of the bearers are dead at the ends, occasioned by blights, there may be a necessity of shortning them, and in such a manner, that there shall be at their upper ends such buds as will make wood; but after the trees have been ordered two

or three years, according to the rules here given, they will generally be found healthy.

The side A, C, in the figure last mentioned, appears stronger than the side A, B, by its having produced more strong horizontals; one of which is placed from K to I, and fills the first space betwixt the stems; and when one side of a tree is much stronger than the other, its stem should be laid lower, and that side which is weakest must be raised more upright.

At this time of dressing a tree, it is proper to examine the lower parts first, for they are most subject to want young wood; but if there is a sufficient number of bearing branches, then those which bore the last year must be taken out.

Branches betwixt six and twelve inches long are best for bearers, for they are generally furnished with strong blossom-buds, and when they have been kept in summer the distance of three inches from one another, they will then have substance suitable to their length; and the stronger they are, the larger their tubes will be, and consequently the sap will circulate more

freely, whereby the blossoms and fruit will be the better supplied with juices.

Bearers of the same lengths before-mentioned, furnished with triple buds, having a blossom bud on each side, will, in the middle, produce leaves to shelter the blossoms adjoining.

The old Newington, and some others, may have bearers left eighteen inches long, and the horizontals must be laid at distances accordingly; but where the horizontals are not far enough apart, the bearers may be laid so much leaning as the spaces require, or if there are too few in number, nail some long ones up curving like the stems. The first branches that I choose to take off from the side A C, are H and Y, which were left for bearers when the tree was planted, and in Fig. 4. are marked G and H. The next that are to be examined are those at L and M, or any others that may chance to be near these places; for there ought not to be any branches left in them, but what are of a proper size for bearers; strong shoots on the bottom parts of young trees so early after planting being very improper; for they are apt to rob those above
too

too much, except they are laid horizontally, in order to produce bearers where wanted; but that branch from I to K is as near the bottom as bearers ought to be, and all branches that grow lower should be taken off: peaches are never good if they grow too near the earth. (I shall shew in another place, my method for covering the lower parts of a wall with vines.)

Those branches at I K are collaterals made the last year, proper for bearers; but as they are more than ought to be nailed up in that space, therefore a proper number of them must be selected for the purpose, and placed against the wall, about six inches asunder, in an upright position; the rest should be shortened to about an inch from the horizontal, for reasons before given.

All other parts on the same side of the tree, must be cut after the same manner as directed for I K. But it may happen sometimes that the shoots made at the upper end of the stem are not so long as are required for horizontals; then they must be cut about four inches long, which will cause them to shoot strongly the next summer,

summer, and sometimes there are only two shoots instead of three long enough, then the short one may be cut as others at U W and U X.

C H A P. LVI.

Of the ordering of Peach-Trees in Summer, when they have been more than two Years planted.

WHEN shoots are laid horizontally in winter, and have no collaterals upon them, as those marked at U W and U X in Fig. 6. there must be left upon them in summer a number of branches in proportion to their strength; that is, if you find they are likely to be long enough for bearers, let all that appear on the upper sides remain, if not too many in number; and if either all or any of them are longer than is desired, in the beginning of May let them be cut to the length of two or three inches, as directed before; and if there are too few, they must be stopt to increase their number, if they are strong enough, as in all probability they will be; but

but when there are many and short, then they must be thinned according as there is a necessity.

All other works of disbudding, &c. must be performed according to the directions given for the last summer, and the thinning of fruit must be performed by the rules laid down for the purpose.

What has been already said relates only to such trees as have two stems at the time of planting; and when there is but one stem, it must be placed against the wall, in the same manner as one of the others, and a new one must be raised as soon as possible from one of the lowest buds, which are very apt to shoot strongly, when their stem is planted so much leaning as A B or A C; and in all other respects it must be managed as in Fig. 4. and 5. of this plate.

C H A P. LVII.

The ordering of a Peach-Tree from the Size of Fig. 5. till it comes to the Shape of the 6th.

ALL the former methods of pruning must be observed, as also turning the stems, and laying the horizontals at the lengths and distances before mentioned, disbudding as their strength requires, and the fruit must be thinned where there is too great a quantity.

Some few instructions more will enable an observing reader to cover a wall, in the manner represented by plate IV.

When the horizontals don't afford so many bearers as are desired, then cut them in May to the length of three or four inches, it will cause them to produce two apiece.

But if a strong shoot appears from that end of the horizontal next the stem, let it remain whole, whether it is on the upper, nether, or foreside; and this may be laid for a horizontal the next winter; and if it
is

is furnished with collaterals fit for bearers, the old one may be taken out; but if it is not, lay it parallel with the other till the winter following, at which time it will without doubt be provided with bearers; then the old horizontal must be taken away, for two ought not to remain so near each other any longer than one summer. When there is not the number of young bearers you desire at the time of winter pruning, and the old bearers have healthy studs, it will be proper to let such remain as can be placed upon the wall at six inches apart, without crossing the horizontals above them; and if these studs don't exceed two inches in length, they may be left unnailed. If in April, or later, any of the horizontals appear weak, then new ones must be provided by the methods before directed; but never choose a branch for that purpose, proceeding from the side of another next the wall; for they are always spungy, by reason the vessels which support them are deprived of the benefit of the sun.

Trees should be kept clear from moss, and where a part happens to be wounded, the gum issuing out should be scraped off, together

gether with all dead bark, and dry foot applied till the running of the gum is stopped. No suckers should be suffered to remain growing from either the roots, or the stock. When a tree is weak, or not too luxuriant, yet has some strong shoots putting out in summer from the stem, at places where there are no horizontals required, they must be taken off as soon as perceived.

But when a tree is too luxuriant, and produces bearers of greater lengths than desired, such strong shoots may be left on all summer; but they must be so placed to the wall, as not to shade other young shoots designed for use, if it is possible to be done: but if not, cut them about nine or ten inches long. In both summer and winter nailing, let the shreads be of sufficient length, for all small branches ought to have as much room to spare at the time of nailing as will contain a person's little finger. In the summer I choose to make use of smooth straight rods, to confine the young shoots to the wall, rather than any other method, by reason they get more air, provided the rods are so nailed with long shreads as to be far
enough

enough from the wall, that the young branches be not bruised betwixt them.

C H A P. LVIII.

Upon Pruning and Nailing such Peach-Trees as have been irregularly cut before.

WHAT has been said on this subject only relates to such trees as have been trained up from the time of planting, according to the methods before directed; but as this treatise may probably come into the hands of those who have old trees under their care, it will be proper to give some directions for the management of them also: for I have seen many trees in a very weak and miserable condition, some of which have been planted twenty years, and of all ages under.

I will begin first with the pruning of a weak tree in the winter-season. The manner of ordering their roots, and preventing of blights, are mentioned in the directions given for managing borders. When weak trees are furnished with small short branches,

ches, having many of their ends dead, and those which are alive full of weak buds, neither fit to produce good fruit nor shoots, it is too often the custom to cut the branches short, and leave many upon the tree; but it is many years before a tree is recovered by this practice, and perhaps never; for shortening the branches increases their number, and by being too near one another they become weak, because the sun and air have not free access to all parts.

If there are any branches tolerably strong, made the last year, near the bottom of the tree, they must be disbudded and nailed like the stems of those trees new planted, and all others must be cut off that would hinder them from being laid in a suitable position, without crossing one another: if such shoots cannot be attained, then choose on each side one, of the strongest and healthiest old branches, and cut off either all or most of the small ones from them, and nail them up in the manner of stems, in order to raise a tree like those in the fourth plate, and every year, as the new made branches increase, take away the old ones to make room: other
branches

branches near the tops of weak trees must be ordered in a different manner; such as have dead tops should be taken off, and those left for bearing must be nailed upright to the wall, the distance of six inches from one another.

If old trees are full of strong wood, and but little or none prepared for blossoming, it shews that they are either planted too deep, or have been improperly cut. If their large shoots proceed from too deep planting, the directions given for ordering of borders will relieve them; and if they are shaded by others, 'tis easy to know what must be done. But if their luxuriancy is caused by short cutting and improper nailing of strong branches, then other methods must be used for their relief: first examine the bottom, and nail up two strong branches for stems, and cut all others out of their way; then the strong branches above must be laid horizontally, at such distances as that the bearers proceeding from them may be nailed upright without crossing the horizontals above them; and if there is not room upon the wall to place the branches at proper distances from one

another, then let the strong ones at top grow above the wall; but they must be nailed with strong shreds, lest they should be torn from the wall by the winds; and if any of those branches project over the lower parts of the tree, cut them off close to the part they proceed from. Let those above the wall remain, till the others below have weakened themselves with bearing. But as the new-formed stems increase in length, and put forth horizontals, others that are in their way must be taken off.

It is also proper to leave studs unnailed, of two or three inches long, upon such parts as were nailed up for bearers the year before; they will greatly check the vigour of a strong tree, whereby it will sooner produce fruit.

If there is not a sufficient quantity of wall for each tree, that is, one hundred and twenty superficial feet, then it is necessary to take some of them away, to make room for the others. It is better to have a deal of fruit upon a few kinds, than trees of many kinds and but little fruit.

If

If such trees as are planted against arches are too vigorous, cut off the roots on the north side of the wall; which may be repeated annually, till their luxuriancy is abated.

Though peaches and nectarines are the most difficult of any wall-trees to keep in order, yet I have found great advantage by using the methods here prescribed: and doubt not but others will have the like success, if they strictly observe what is said concerning pruning, disbudding, preparing of soils, manuring, watering, &c.

C H A P. LIX.

Upon Pruning and Nailing an Apricot, and Almond-Tree.

THE figures in Plate IV. will serve also very well to represent an apricot and almond of different ages, as well as a peach, or nectarine, and the manner of pruning is pretty much the same for all. The greatest difference that I observe between them, is in the autumn shoots, and collaterals proceeding from the sides of

shoots of the same summer's growth; for those of the apricot have generally fewer blossom-buds, and are more liable to be killed in the winter, than those of the peach and nectarine. If apricots are not pruned till the latter end of January, it may then be perceived in the most part of them whether they will live or die; for though some living shoots appear as bright as the others, yet if weak they will retain a much greater mixture of green, and not so brown as healthy ones; and such as are dead will be black, either all over, or by spots. When these autumn shoots proceed from the ends of others, they should always be cut off a little below the joint, which is easily discovered by the difference of colour: the parts below are pretty certain to bear, and those above generally die, especially if they are shortened. But such autumn shoots as are healthy, and grow from new horizontals, if in places where bearers are wanted, they must be nailed up to the wall in the same manner as peaches, without shortening, for that is apt to kill the small branches of the apricot. All such col-
laterals

laterals as look tainted, must be cut off close to the horizontals; and if the ends of the branches designed for stems or horizontals appear black, they must be also taken off two or three buds below the tainted place, otherwise the mortification will descend downward, and destroy the greatest part of the branch.

In the next place it must be observed, that apricots should always have the healthy bearers left on two years together; for they are oftentimes furnished with short studs the second year, which are more certain to produce fruit, than those that are longer, and if not more than three inches long they need not be nailed to the wall.

As to stems and horizontals, they must in all other cases be managed in the same manner as directed for peaches; and the horizontals of different kinds must be laid at distances from one another, suitable to the natural growth of every sort.

The strong branches of an apricot tree are subject to issue out gum, whereby they are often very much weakened. These eruptions generally happen at places where the rind is wounded, and there is for the

most part a piece of hard dead bark furrounding the wound first made, which prevents it from healing, and will in time kill the branch if suffered to continue upon it; therefore this grievance should be removed as soon as discovered, by cutting away all the dead wood and rind to the quick; after which, the wound must be covered either with pitch and rosin melted together, of each an equal quantity, or else with dry foot. It will not prove mortal in case you are obliged to cut the branch three parts through, in order to take out the dead, but will soon heal up; whereas if it is suffered to remain, that part of the branch above will soon die. Apricots must in all other respects be pruned and disbudded like peaches; and also their fruit thinned after the same manner, in proportion to their natural size.

But observe that apricots require more water than peaches and nectarines, and where there is a full crop of fruit, if the season is dry, they must be watered plentifully for the space of a month before they are ripe; otherwise they will be both small and ill tasted.

An

An old apricot-tree that is in an ill shape may much sooner be brought to a desired one than a peach, for it puts out stronger branches, with which may be formed new stems and horizontals.

Though almonds will bear very well on standards, and during the time of flowering make a beautiful appearance in wilderness quarters, &c. yet they are sometimes planted also against walls, and may be pruned in the same manner as directed for apricots, but may have their studs or bearers of six inches long left unnailed.

C H A P. LX.

Of the Thinning of Peaches, Nectarines, Apricots, and Almonds.

WHEN there is too great a quantity of fruit suffered to remain upon any part of a tree, it is not so good as if there were only a proper quantity left on, and sometimes a tree becomes weak by bearing too plentifully.

All fruits ought to be thinned according to their natural size; for there ought to

be fewer left upon a bearer of larger sorts, than on those of a nutmeg-peach or other small kinds; the length of the bearers should likewise be considered, as also of the horizontals on which they grow, and the quantity of fruit upon all the bearers proceeding from one and the same horizontal. Suppose a horizontal is three feet long, with six branches upon it, (which there ought to be if the tree is healthy and strong) then of the smaller sorts of peaches there should not be more than twenty or twenty-five left upon all the bearers; but if there is fruit only upon some of them, then there must not be so many left on; for four or five are sufficient for one bearer, and as many as will be well flavoured.

The largest sort of peaches and nectarines should not have above a dozen left upon the same quantity of tree before mentioned, and these not thicker than two on a bearer; but weak trees or branches must have fewer left on, in proportion to their strength.

The thinning of fruit ought not to be done all at one time, for sometimes many
will

will die after they are a quarter grown, which looked thriving before.

When there is a large quantity of fruit set, there is generally a great part of them in clusters; it is therefore necessary to take some off when they are as large as horse-beans, but always leave such as are covered with leaves, or rather those growing at the same joint, where there is either a shoot, or some leaves, for they make better fruit than others.

Fruits are thin'd the best either with a very narrow-pointed penknife or scissars, for by nipping them off with the thumb and fore-finger, those designed to be left on are often displaced, as also the young branches and leaves.

Tho' I advise to thin fruit at different times, yet it should not be done later than the month of May; for if they are suffered to grow pretty large they rob one another; and none should be left on so near together as to touch before they be full grown, for they are apt to throw each other off, or at least to spoil their shapes. Besides, they never come to the size they would otherwise do, and large fruit when ripe is always

ways the best flavoured, and in wet seasons those that are single don't rot so soon as when two or more grow near together, either peaches, nectarines, or apricots: and though the flesh of almonds is not valuable to eat, yet when the fruit is large the kernels are better; for which reason, I think it is proper to thin them, and they will likewise be less subject to drop from the tree before they come to their proper size.

C H A P. LXI.

Planting of Vines, and how they are raised.

IN treating upon the planting of fruit-trees, in a former chapter, I have not given proper directions concerning vines, or such things as have only flaccid roots at the time of replanting: I will therefore, before I speak of pruning, lay down proper methods for planting.

And here observe, that what hath been already said concerning the packing of other kinds of trees, is proper also for vines, so is likewise the time of doing it the same,

same, and covering them with wet moss, which ought to be done immediately after they are taken up, whether from the mother-plant or from beds.

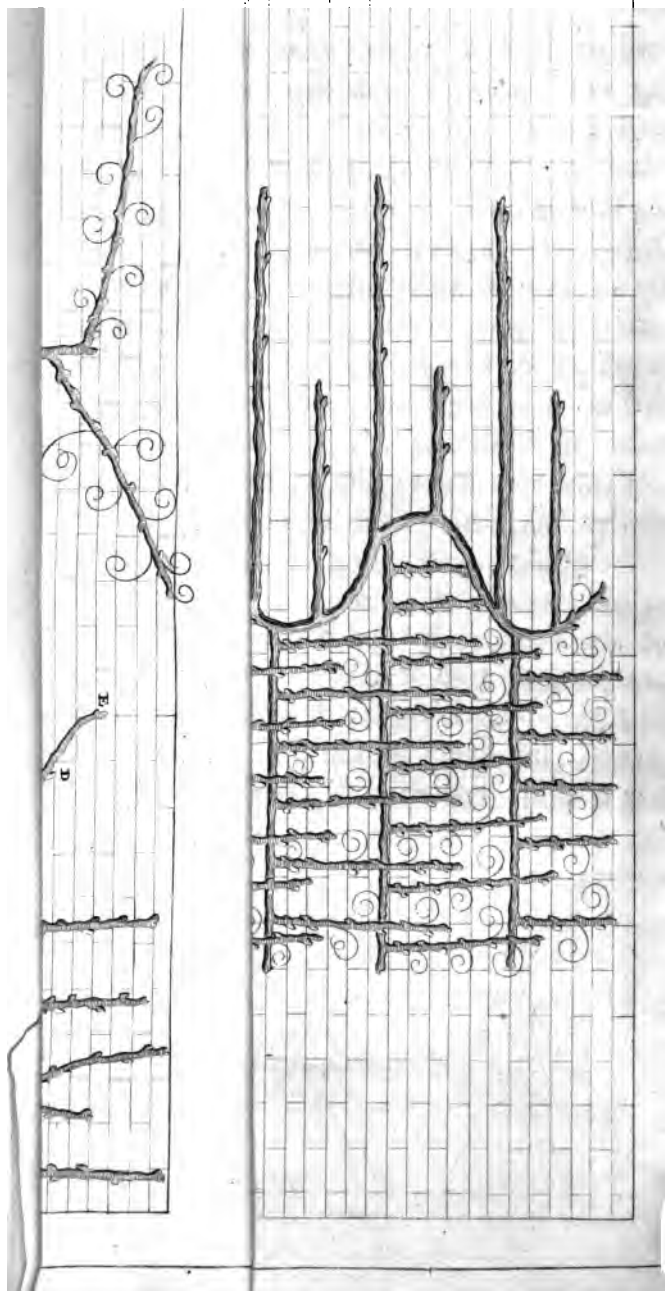
When they are brought to the place where they are to be planted, the strong part of the root from which the fibres proceed, must be cut at the end, like the strong roots of other trees, but the other parts may remain as you find them, it being difficult to know which are dead; and the method of planting them prevents the living roots from being injured by the dead ones putrefying in the ground.

There is no occasion to make a large hole for the reception of the root, but only mark upon the border how far the woody part extends itself when placed parallel to the wall, at the distance of about six inches; and for the space thus marked, take out a spit of earth nine inches deep on each side, slanting in such a manner as to leave a ridge in the middle of the trench, the top of which ridge should be about three inches below the surface of the border; then lay the woody part of the root upon this ridge, with the fibres divided on each side, according

cording as their natural manner of growing will allow, and extended downward into the drills; this done, fill up the trenches with earth, treading it down gently until the strong part of the root is covered about three inches thick; after that lay a covering of foot or ashes upon the hill, as directed for other trees, this being all that is necessary at the time of planting, unless the earth is very dry, and then moderate watering will be proper.

Vines may be produced from cuttings of the last year's shoots, between twelve and eighteen inches long with half an inch of old wood at the lower end: they must be set slanting in the ground, and only one bud or two left out; but there are stronger plants raised in one year from layers; but every person that plants vines has not an opportunity of doing it upon kinds wished for, so must be content with cuttings.

Most sorts will grow vigorously with us in England, but as they all come originally from a much hotter climate, the fruit of some kinds seldom ripens here without the assistance of artificial heat; though some
other



other sorts will bring their fruit to perfection upon standards, with proper cutting only, others with cutting and nailing their branches to walls upon south or south-east aspects.

C H A P. LXII.

An Explanation of Plate V.

THE figures in this plate exhibit vines of different ages.

Fig. 1. represents a layer when first taken from the mother plant.

Fig. 2. the same when cut the customary way.

Fig. 3. when planted and cut according to the method I practise, having one branch taken off and the other shortened.

Fig. 4. is the same with two shoots raised from the two buds left on, when under the representation of Fig. 3.

Fig. 5. represents the same vine cut and nailed in the winter.

Fig. 6. is a vine cut and nailed in the winter, by the common method.

Fig. 7. is one full-grown, with one of its sides cut and nailed in the winter, and the

190 A T R E A T I S E O F
the other remaining as it was nailed in the summer.

Fig. 8. is a long branch supposed to be made last year, and turned in winter to cover a bare part of the wall.

Fig. 9. is called the fowgelder's horn, and is a method made use of by some of the best pruners to dispose of long branches.

C H A P. LXIII.

Of pruning a Vine the first Year after Planting.

I Have always observed that the best season for pruning vines in winter, is, about the latter end of January, or beginning of February, when the weather is dry; though it is customary to cut them immediately after their leaves are fallen off.

But vines cut in October or November always make weaker shoots, than those cut in January; for in the beginning of the winter, the wood, being soft and spongy, imbibes cold and watery particles at those places where it is cut, and renders the next year's shoots weak.

Fig. 3,

Fig. 3. represents a vine with only two buds, as at A and B; though there were others lower, yet as two or three of the lowest buds are generally small and very near together, they produce only small shoots, for which reason I think it is better to take them all off, and leave only two higher upon the branch, for they always put out longer shoots than those below.

I always take one branch off the layer before it is planted; for if there are but two strong shoots from a vine the first year after planting, it is sufficient; and this may reasonably be expected from the two buds left on at A and B.

Fig. 2. hath part of both branches left on, and all the buds they produced; but I think those that are produced after this manner of short cutting are generally weak, and too near one another.

C H A P. LXIV.

Of Pruning a Vine the second Year after planting.

FIGURE the 4th represents a tree with two branches supposed to have been produced from the two buds at A and B in Fig. 3. but they ought to be nailed more upright in summer than they appear in the plate.

Fig. 5. is a representation of the fourth cut and nailed in winter after the method I practise, with no other buds left on but those at A, B, C, D, E, tho' there were several others at the lower end of the stem which are taken off, and some likewise from the under side of the branch A and B.

Observe, these two buds at A and B are in such places, as that the shoots proceeding from them may be nailed upright without being too near each other, and that at A may probably produce fruit, but those buds proceeding from the lower end of a branch seldom produce prolific shoots; for which reason, I take them all off, except

one on the upper side, as that at B, from which a branch may be expected that will be fit for a horizontal the next year. But the others would not only deprive those at A and B of part of the juices collected by the roots, but also shade them from the benefit of the sun; and if the buds had been left on the under side, there would not have been room to have nailed up the branches without shading those above.

Those buds at C and D are designed to produce shoots that will bear fruit; and the next winter, if long enough, they must be laid horizontally.

That at E is intended to lengthen the stem, and in winter must be turned in the manner represented by Fig. 7. but before branches are turned for stems or laid horizontally; it is proper to take notice of their length, and if they are less than four feet long in any sort of vines, they are too weak, and if there are no stronger branches to supply their places, they must be cut down to the first large bud at the lower end; and if all other buds are taken off, that left on will make such a shoot as is wanted before the next winter.

By giving the stem such curves, it will occasion branches to break out of the old wood, from those parts of the stem that are laid the most horizontally; and though they seldom produce fruit the first year, yet some of them should be nailed up in the summer, if there be space for them upon the wall, and may be laid horizontally in the winter, where vacancies require them.

But I don't choose to lay any young horizontals nearer each other than eighteen inches, and if those branches designed for stems or horizontals have not been stopt in the summer, then one third part of their length must be taken off in the winter.

These directions I think are sufficient for the management of young vines; and what is to be done when they bear, I will treat of by and by.

CHAP. LXV.

Of Pruning a Fruit-bearing Vine the
common Way.

FIG. 6. represents a vine cut and nail'd in the winter after the method generally practis'd, with all the nether and other uselefs buds left on ; and though the buds at the upper end will produce fruit-bearing branches, yet they will be so near one another, that except part are taken off, both the fruit and young wood will be too much shaded : by this method of cutting and nailing, there will be a necessity to take out more branches than there are to be nailed up at the first time of dressing in the summer ; and if they are not taken out, the present fruit will be worse, and the next year's branches will produce but little fruit.

C H A P. LXVI.

The Pruning of a Vine that is brought to bearing, and is in a regular Shape.

THE ordering of young vines having been sufficiently treated of, I will now give directions for managing them when they are brought to bear.

The side A in Fig. 7. represents the branches nailed up in the summer, as when the fruit is upon them; the other side shews how the vine must be cut and nailed in the winter, with no buds upon the branches, but in places where shoots are required; and when the branches have been kept in proper order the summer before, then either all, or most of the buds left on, will produce bearing branches; for all those nearest the stem, and on the under sides of the branches are taken off with the point of a sharp knife, when the branches were nail'd up in the winter, for then it is known what distance the next year's shoots ought to be from one another; and I leave buds in no other places but where shoots are desired,
but

but there should never be too many left on.

I have no other reason for taking the buds from the under side, but to lessen the number of ensuing branches, for they would all produce bearers, except two or three nearest the stem B.

In the month of May, nail the branches to the wall as upright as possible, for they will be less subject to put out collaterals, which rob the fruit, than when they are nailed either horizontally or reclining.

It is a common practice to nip off the tops of branches at the first time of summer nailing; but this I think wrong, for it has the very same bad effect as improper nailing: but at the same time, all shoots breaking out of the old wood must be taken off, except those growing at such places where they are wanted for new horizontals the next year.

The young branches must be often nail'd up in the summer, to prevent the wind from breaking them; and when they are grown so high as to shade the fruit on the branches next above, or when they are in blossom, then nip off their tops at the se-

cond joint above the fruit; but such as are designed for new horizontals should be nailed at the greatest height they will allow, without shading either one another, or any branches that have fruit upon them.

Those branches that are stopt in their growth by shortning, will put out collaterals at almost every bud; such shoots must be nipt off, one joint above the place they proceed from, before they shade the fruit too much; this work should be often repeated in the summer, but never break off a leaf from any growing branch,

Always observe to provide branches for new horizontals where wanted, for the old ones should not remain longer than two years; but it would be better to have fresh horizontals every year, for the less length of old vessels the sap passes through, the larger the bunches of fruit will be.

The lowest branch on the side D, was a shoot made the last year, having all the buds taken off from the under side, but has all left on the upper one, all of which I expect will produce bearing branches, except that nearest the stem, which if it shoots strongly, must be preserved of a
length

length sufficient to make a horizontal the next winter.

The short branch above D, was obtained from the stem the last summer, as also that at C, on the other side; and as there was not an opportunity to lay in a new horizontal of a sufficient length at E, I therefore left this shoot above D, to produce bearers, in order to cover the naked part at E, F, where the branches that bore the last year are taken off from the horizontals; but the other end has buds upon it, and was one of the bearing shoots the last summer; all the parts above are cut and nailed by the same rules, as ought also the side A to be.

But if it happens, that there is not a shoot of a proper length near the stem, to be laid for a new horizontal, as that is above D; then, instead of taking the branches quite away that bore the last year upon E and F, they ought only to be shorten'd, about two inches above the first large bud at their lower end; after that, nail them leaning as much as they will bear without breaking; and all the small buds below must be taken off with a knife point, leaving upon each shoot one bud only, as at G, H, I; when this is done there is no need of one at K.

Sometimes it happens that many of the shoots which bore in the summer are weak at the time of winter-pruning, and perhaps but one strong one at the end of a horizontal; when that is the case, I turn it quite back to the stem, or as near as it will reach, as that near B is supposed to be turned below the horizontal to A; and then the two middle branches should be cut off close, but that next the stem should be cut like that at G, with one bud on, to make a shoot for a new horizontal the next year.

Though the branch from B to A is laid below the old horizontal, yet it is not always required to be so, for it would grow as well had it been above, but I always contrive to lay the new horizontals at about half a yard from each other, and if they be close to an old one, it is not the worse. When there is not a branch of any sort near the stem, then as near to it as possible; I have twisted the old horizontal quite round, before the branch was turn'd from B to A, and this method generally had the desir'd effect.

I am apprehensive many practitioners will be much against laying in a branch four feet long of one year's growth; imagining that

that will too much weaken the root, which is the common objection against the practice.

But I hope reason and experience will convince them of the contrary; the least observation will shew, that there are fewer buds upon those long branches against one yard of wall, than in the same space where vines are ordered according to Fig. 6. nor can so many branches proceed from them; for which reason those shoots which are produced must be stronger than if the number was greater, and without receiving any more juices from the root than those that are cut short; by which it is plain, that long branches are no cause of weakness to the roots,

C H A P. LXVII.

Of Walls and the Space proper for Vines.

THough the full-grown vine covers such a large space, yet I think it is more than a vine ought to have, in order to produce good fruit; for vines are much stronger when they are not suffered to grow above four feet high, and planted from one another

another at the distance of eight feet; for then new horizontals may be laid almost every year, which will produce better fruit than those that are older.

Likewise the heat reflected from the earth makes a great addition to the fruit; for these reasons I chuse to place vines in the middle of the spaces between peaches and nectarines, in order to fill up the vacancies, otherwise part of the wall would be naked at the bottom, as appears in Plate IV. Fig. 6.

C H A P. LXVIII.

Of the Pruning and Nailing a Vine-branch that is eight or ten feet long.

FIG. 8. is a long shoot turned to fill a narrow piece of walling; it has many buds taken off, and only such remaining upon it as are likely to produce bearing branches, at distances from one another proper for them to be nailed; by this means I have caused one branch to produce as many bearers as have the next summer born above twenty bunches of grapes, as large

large as any others, either on the same vine, or any of the same kind,

Fig. 9. is a shape which some people turn long branches into without disbudding, and I have seen them bear much fruit, but the shoots are at very improper distances from one another, till part are taken off; and if the buds producing them had been displaced at the winter pruning, it would have prevented the juices from being wastefully spent in forming superfluous shoots, whereby the others would consequently have been stronger.

C H A P. LXIX.

General Rules for Pruning a Vine.

I Will here add two or three general rules to be observed in pruning and nailing.

When the end of a branch is cut in winter, it should not be done too near the bud next below, but about two inches above.

Whenever a branch is taken off, it should be cut close to the part it proceeds from, and not left with a short stump, for these only put out young useless branches, which

rob others ; yet, notwithstanding, this method is much practised.

Lay none of the young branches horizontally in summer, nor upright in winter.

Sometimes a vine in April, or the beginning of May, will discharge, at places where they have been cut, a large quantity of juice, which is called bleeding, and very much weakens the bearing branches that grow above those wounded parts, except the running be soon stopt ; which may be done by wiping the part very dry with a cloth, and immediately after lay on some dry foot, wood ashes, or unslaked lime ; and if the bleeding continues, then the foot or other ingredients must be applied every day.

C H A P. LXX.

Of the Pruning of an old Vine that hath been ill cut before.

MANY old vines are in various unmeaning shapes, with large bunches of small shoots like besoms ; but they are more capable of being altered in a few years

years than any other tree, because they make such extensive shoots in one summer, as will soon form a new and regular tree, if rightly managed; but before this work is begun, it is proper to consider what compass of wall each plant has to cover; and if it is not greater than what is represented by Fig. 7. the tree may be brought to the shape desired.

If the first attempt is made in summer, nail up all young branches to their full length, that are in proper places, either to make a new stem, or horizontals of the next year; and all others that are without fruit, or such as shade the former, must be cut off: but if in winter, the tree must be cut in such a manner, as that by taking off old branches, many young shoots may be produced in the middle part from bottom to top, which must in the summer after be nailed up, as directed for those on young trees.

The winter following, take the strongest of those shoots at the bottom of the tree, and disbud and nail it for a stem, and if it does cross some old branches for one year, there will be no harm; all other
young

young branches must be treated in the same manner as directed in Fig. 7. and all stumps must be taken away from the old branches, that would put out leaves too near the young ones.

But whilst these new branches are preparing in the middle of the tree, care should be taken to produce fruit upon the extremities of the old ones, but they must be cut quite away as the new branches become capable of covering the wall.

When vines cover a greater space than represented by Fig. 7. they require different management, according to their height and distance from one another. Such as are low may have branches laid to make roots about eight feet asunder, in order to carry up stems from thence to the top; but some vines are caused to cover a great quantity of wall, and have no young branches within eight or ten feet of the ground; in such cases, there is no opportunity to make new roots; then new stems must be carried up from the lowest horizontals at the distance of six feet from each other, and ordered like those raised from the ground.

C H A P. LXXI.

Of Thinning of Grapes.

IT is as proper to thin grapes when there is too great a quantity as any other fruit; which may be done either by taking off the bunches only, or the branches with the fruit upon them: as soon as the blossoms are shed, it may easily be discovered which are likely to make the hand-somest and largest bunches; and when there are two bunches upon one shoot, the worst should be always taken off, provided the grapes are of a large sort, such as the St. Peters, Lombardy, Tokay grape, &c. and when this way of thinning is not sufficient, then some of the branches must be cut away according as there is a necessity.

But the smaller, or midling sized bunches of grapes must always be thinned, by taking off branches where they are too near one another; for two bunches upon one strong branch will be as well tasted as if there was but one.

There

There are many kinds of grapes mentioned in the catalogue, which require more than natural heat to ripen them; but they are pruned like others. I shall treat of those that will bear upon standards in another place.

C H A P. LXXII.

How to preserve the Blossom of Grapes, from being injured by Frost and too much Wet.

FROSTS in May or June spoil many bunches of grapes, and is the chief reason why some berries are so much smaller than others on the same bunch, as may generally be seen in the sweet water kinds, for they blossom the earliest, and consequently suffer most from the frosts.

As the weather is generally dry in summer, when the nights are frosty, I have found moderate watering very serviceable, and that there have been better bunches upon those vines which were watered than upon others that were not, tho' of the same kinds and against the same wall.

Take

Take urine or brine that is equally impregnated with salts, and mix therewith the same quantity of water, and pour upon the roots of a large vine two quarts every other night, and so in proportion for those that are younger, and of a less size; this must be done on the top of the border as near the stem as possible, without touching it; and will be of great service any time in summer, when the earth is dry, but in wet seasons lay upon the borders once in a month, either lime, ashes, or soot, as directed in the spring after cutting.

I have also known cold rains to be prejudicial to the blossoms of grapes, and to guard against it and also frosts, I have put the bunches of blossoms at their first appearance into bags of crape, which I have found of great service, for I have had much better bunches in them than the others upon the same vine: besides they were earlier ripe, and not damaged by flies.

The best flavoured grapes, and the largest, that ever I tasted, were produced from vines planted against a wall about four feet and a half high, without any covering in front; tho' not so early ripe as those within stoves; and this is the only sort of wall I should choose, provided glasses could be placed against it at pleasure; which should be done when the nights are frosty, and either taken off or opened more or less every day when the weather is fine.

There ought to be a few bars of wood nailed upon the wall, about an inch thick, to prevent either the fruit or the branches from being injured by too much heat.

The borders should be of the same soil as those for other fruit-trees, and not such as is prescribed for vines against other walls; but these should be watered with the same mixtures, and as often as the others, and must in summer be watered every night over and above with water alone, except when the surface of the border is made wet with rain.

I need not give any directions for building walls for the purposes before mentioned, there



Place VI

37



there being many plans of that sort already extant.

C H A P. LXXIV.

The explanation of Plate VI. and pruning of a Fig-tree against a wall.

THIS plate shews the shapes of a fig-tree of different ages: Fig. 1. is either a tree just planted, with three branches left on, or one that has been planted a year, with three buds, or more upon it, which has produced shoots.

Fig. 2. is a tree a year older than the first, brought to the shape it appears in, by displacing all other buds but those which produced the shoots.

Fig. 3. is a tree almost full grown, tho' it had the same shapes as the other two figs when it was young, and the horizontal parts A B and A C, were like A and B in Fig. 1. but had they been laid horizontally when so short, they would not have reached near enough the out sides of the space designed for the whole tree; and as they would increase but slowly in length

P 3 after

after, part of the wall would have continued a long time bare.

As the roots of a fig-tree are like those of vines, so must they be planted the same way, tho' pruned differently.

If the young shoots of a fig-tree are not too near each other they will produce almost as much fruit as leaves, both from the same places, but not all of them at the same time; for the leaves drop off the trees when the fruit near the upper ends of the branches are only like small buds; and there are many other appear the next spring from leaves where leaves were shed from in the autumn, that is, at the extremity of those shoots that were not killed by the winter's frosts.

These small ones and those that only appear in the spring, are the most certain to ripen, for those which are pretty large in the autumn are liable to be killed in the winter; but if any of them live they ripen the earliest the following summer, and are the best fruit.

Those which appear the largest at the time of the trees shedding their leaves, were such as put out earliest upon the new
made

made shoots; but few of which ripen in this nation the first year, except some particular kinds, as the catalogue mentions, tho' I don't doubt but there are many which do in more southern climates, as in Barbary, Spain, and Italy, where I am informed they are in great perfection.

I can't think it proper to take off the live end of a branch in the spring; for that part is most certain to produce ripe fruit; neither do I approve the ending of young shoots in June, tho' it is practised by some people, to procure a great number of branches, but they may be obtained by laying strong ones horizontally, and if they are old make nicks on their upper sides, which will cause young ones to come through the rind. The spring, or what may be called winter-pruning, I think the properest time for taking out large branches, which I generally do about the middle of March, when the weather is dry. Then should all dead fruit be pulled off, and the young shoots that are left should be chosen with live ends, if possible; if not, the dead ends must be taken

off, and the branches nailed up at least the breadth of a full-grown leaf from each other.

As in the summer-time there will be more branches put out than can be placed at the distance from each other required, let them be taken off at their first appearance, and the others kept close to the wall in the summer, by nailing them as they advance in length. This method will prevent their being injured by the winds, as they are subject to be, by reason of their large leaves.

If at any time there be more branches put out from the horizontals than can be nailed upright, at proper distances from each other, let them be taken off at their first appearance.

As the upright branches advance in height, take all from the middle branches that would intercept them before they reach the top of the wall, and suffer no collaterals to remain upon them (at winter-pruning) above two inches long.

The wood of one year old, in the uprights, produce no leaves which gives room
for

for an annual succession of branches, admit there be no long collaterals left on.

I know there are many practitioners that only nail the strongest parts of a tree, and leave the collateral branches loose, tho' of a great length, and have many times plenty of fruit upon them.

But they never ripen so early as those that are near the wall; and if they do at all, it is only such as would ripen on dwarfs or espaliers; and I think it wrong to bestow a wall upon such trees as would produce as much good fruit without it.

The catalogue shews the most tender sorts, and those ought to be guarded with matts, so soon as the hard frosts begin; and continue covered till March.

C H A P. LXXV.

Concerning Espaliers of Fruit-trees, and the Manner of making them.

THere are many kinds of fruit-trees whose branches are naturally inclined to hang downward, and by crossing and galling one another, often become very

very cankered; likewise when they grow too near together, many of the branches being deprived of the benefit of the sun, do not produce much fruit, and that very small and ill tasted, and also subject to be beaten down by the winds.

But when the branches of good kinds are artfully supported, they will produce fruit both large and of a pleasant taste, without the help of a wall, provided no extraordinary heat is required. The method generally used for this purpose, is to bring them to the form of a hedge, whereby they are not only serviceable in defending the quarters of a kitchen-garden from severe winds, but also prevents them from being seen by persons in the walks, which are extremely pleasant, when the fruit-trees are in blossom. They may be supported in different manners, as every one thinks proper; some use only common hedge-stakes, as being the least expensive; but these are of such short duration, and want so often renewing, that they become more chargeable in the end than the following method, which is much better for the trees.

In

In the first place, posts of oak or elm, about six inches square, and thirty long, covered with pitch, must be set in the ground about twenty inches deep; and to the top of every one of these posts there must be a standard of oak or fir fixed; if of oak, about three inches square will be strong enough, and the same height you intend your espaliers to be, which should not be more than seven feet; for when they are higher they are frequently damaged by the winds; but if they be of fir, they ought to be four inches square at least: then betwixt every one of these standards there must be two rails of about three inches square, mortised to the standards, one about two feet above ground, and the other about a foot below the tops of the standards; after this, straight rods of hawthorn, or young ash-trees, or any other sort of light wood, must be fixed to the rails, about nine inches asunder (on the same sides as the trees are to be planted) in an upright position from the ground, and as high as the tops of the posts and the whole frame is painted; it will last much longer, and be less subject to caterpillars.

'Tis

'Tis customary to tie or nail the trees to stakes, for two or three years after planting, before a frame is set down, but it is much better to set down the frames sooner, for when trees are arrived to this age, holes for the posts can't be made without destroying some of their roots.

There must be twice as many posts as trees, and placed at equal distances from each other, in such a manner, as that a tree may stand in the middle of every other space. I have already given directions how to make borders for espaliers; and the methods for cutting their roots and planting them are the same as for wall-trees; but espaliers don't require more than three fourths of the space allowed for others, because they have the advantage of putting out bearers on both sides, which wall-trees have not.

CHAP. LXXVI.

How Pears planted in Espaliers are to be pruned.

I Have before given directions for improving of old pear-trees, &c. against a wall, which I hope will inform any one how old espaliers and dwarfs are to be ordered, so shall only speak of young ones.

Pears upon quince-stocks are the best for espaliers, but they should be pruned in a manner somewhat different from wall-trees, because they are planted at different distances, for they must be trained up with two stems like a peach; but the horizontals should not be distant from each other above three fourths of the space allowed for wall-trees; all other ways of management are the same for both.

But one thing more is requisite to be observed in regard to the horizontals of such trees as grow vigorously; and that is, if they shoot to a greater length before they bear than half the distances between their stems, then they must be reduced to

222 A T R E A T I S E O F

one stem, like those planted against walls. Instead of nailing them in summer to the frame, whilst the branches are tender, they may be tied with strings of garden-mats ; but in winter, the Dutch osier is better for this purpose. The trees ought to be let loose from the frame early in the winter, that they may have the benefits of the rains and snows before pruning.

C H A P. LXXVII.

How Apples in Espaliers are to be pruned.

A P P L E S design'd for espaliers should not be propagated on crab-stocks ; but either upon paradise, creepers, or codlin-stocks.

A regular cutting of apple-trees makes great improvement in the fruit, both as to size and taste ; especially, the choicest sorts of table-fruit, which, I think, ought to be planted in gardens only, and not in open orchards ; and, it is for that reason I have included so many of them in my plan of a kitchen-garden.

The

The way of planting apples in espaliers, and the manner of ordering them are the same as for pears upon quince-stocks.

C H A P. LXXVIII.

Of Mulberries and Filberts, and how to prune them in Espaliers.

THE mulberry produces much better fruit when planted in espaliers, than from tall standard-trees, and not liable to be shaken off by the winds.

They should be planted at the same distance from one another as prescribed for pears upon quince-stocks, but pruned in a different manner.

For, in the first place, they should be trained up with one stem, leaving horizontals upon it half a yard asunder ; because the branches proceeding from a strong shoot or horizontal, will not bear the first year ; for the fruit is most commonly produced from shoots proceeding from buds near the ends of those branches, which grow from horizontals the year before ; and, as neither the buds of strong branches,
nor

nor the buds at the lower end of a branch produce shoots that will bear, it is, therefore, intirely wrong to shorten the collateral branches ; and should the horizontals be nearer together than the space before directed, the bearing branches would too much shade one another.

When the bearers are come to the length of half a yard, they must be shortened ; and, as many small branches will put out from them, some of those nearest the horizontals may be left on ; and, likewise, young shoots growing from the stem should be encouraged and trained up for new horizontals, in the same manner as directed for pears.

Filberds and large nuts must be ordered the same way as mulberries, with this difference only, that they don't require above half the room.

C H A P. LXXIX.

Of the ordering of Quinces and Figs in
Espaliers.

THE quince is also sometimes planted in espaliers, and requires the same management in regard to cutting as the mulberry, but there is no occasion for its horizontals to be more than a foot asunder, and it should have two stems, because it produces but short horizontals.

Some sorts of figs will do very well in espaliers, where the soil is dry.

Their branches should be confined to the frame, at the same distance from each other, as directed for those planted against walls, and should likewise be placed in the same position.

C H A P. LXXX.

Of Pruning of Cherry-trees and Plum-trees in Espaliers.

CHerries and plums must be ordered in the same manner as pears upon quince-stocks, only observing to renew the horizontals before they are too old ; for these kinds of trees bear the best fruit, and the greatest quantity upon young studs; I don't mean to have the old branches taken out, so as to leave part of the support bare, but to preserve young shoots from the stem, or near it, and lay them between the old horizontals, whose studs must be taken off when too crouded to give air to the new ones.

The branches of stone fruit-trees are subject to gum, if they are strained or bruised ; so that all possible care should be taken in tying, lest they should be galled by the strings.

C H A P.

C H A P. LXXXI.

Of the Ordering of Apricots and Almonds
in Espaliers.

THERE are several sorts of apricots that will bear well in espaliers, without the trouble of tying their bearers; but they must be trained up with two stems, and their horizontals laid about a foot asunder, and tied to the frame.

The bearers must be left at the same distance prescribed for those against walls, and the horizontals renewed in the same manner.

The sweet almond will likewise bear very well in espaliers, managed only in the same manner as the apricot, and both should be trained up in the shapes represented in Plate IV.

C H A P. LXXXII.

Of the Ordering of Grapes in Espaliers.

THERE are several sorts of grapes that will do very well in espaliers ; but they must have a frame lower than what is mentioned for other fruit-trees ; for, the nearer the ground the earlier they will be ripe.

The posts of the frame need not be more than two inches square, made of oak, about a yard long, with a sharp point driven a foot into the ground, at the distance of two yards from each other in a strait line ; and then along the tops of these posts, there must be a little pole or pantile-lath nailed ; another nine inches below, and likewise one about three inches from the ground.

As these espaliers are very low, they had much better be within a quarter of the kitchen-garden, than upon the boundary. The vines should be planted about eight feet asunder, after the ground is prepared as directed for those against walls ; and
where



where it is intended to have more than one row of these espaliers, they must be set from one another the distance of three feet.

They should be cut exactly in the same manner as vines planted against walls, with two courses of horizontals, one tied to the lower bar, and the other to the middle one: the bearers of the lower horizontals may be tied to the horizontal above, and the bearers of this to the upper bar, and ordered in summer as those against walls. The ground should be kept clear of weeds, and a little lime or coal-ashes dug in every year after the trees are cut.

C H A P. LXXXIII.

Of Pruning, &c. concave Dwarf-trees.

THE 5th, 6th, and 7th figures in the VIIth Plate, represent a dwarf-tree of different ages, either concave or horizontal. Concaves are much the properest for borders, because they don't cover so much ground as horizontals, suppose the branches of both to be of equal length.

A tree designed for a dwarf should, when taken from the nursery, have four branches or more, no less than two feet long, growing from the stem, betwixt twelve and eighteen inches from the ground, as those in Fig. 5. but it is better to have six or eight branches, that some may be taken off in proportion to the loss of roots: but if there are not four, then the strongest must be cut to about four inches long, either at the time of planting or soon after, to increase their number, with only as many buds left on it at the upper end as there are shoots required. Their roots must be cut like those of wall-trees, and planted at sixteen or eighteen feet apart, and the stem must be placed erect. But observe, that all branches that are more than two feet long at the time of planting, must be cut to make their number increase, for at that distance from the stem more branches are required.

When any of the shoots are two feet long, they must be inclined about forty-five degrees, either by nailing or tying to stakes fixt in the border.

The

The branches must be kept at equal distances from one another, at the upper ends; and, if any of them do not put out two or three others at the distance of two feet from the stem, then their extremities must be taken off to that length, and all the lower buds, leaving only such a number remaining as there are branches desired; but if there be proper shoots, then let all the nether buds or branches remain till the next winter, and if the new shoots AA, &c. in Fig. 6. are two feet long or thereabouts, all others that don't exceed a foot in length may be left for bearers, and those that are more must be cut out. If any of the new-made branches that are at the extremities of others, are not much more than a foot long at the time of winter-pruning, instead of leaving three, as in Fig. 6. leave only two of the longest shoots, and such as exceed two feet must be cut to that length; or, if there are three others nearly of that length, let that which is too long be cut out.

These new branches must all be confin'd at equal distances from each other; and the best way of doing it, is to make a sort

Q 4 of

of hoop or circle of small ash or haffe, somewhat smaller than hop-poles, which must be supported by three or four stakes, at such a height, that the branches may be tied to the hoop within six inches of the upper end, in the same rising position they were first confined.

After this is done, the tree will nearly represent Fig. 6. and must by the same method be brought to the shape of Fig. 7. till the first made branches are about eight feet long, and such as extend further must be taken quite out close to the part they proceed from and not shortened.

I have seen these sort of dwarfs greatly abused, by too much shortening or stumping; especially at first, before they begin to shoot strongly, and then they cut them again because they are too vigorous; by which means, a tree is much longer before it bears, than it would otherwise be.

Branches of dwarf-trees should never be shortened, but where shoots are wanting, or to take out a canker'd part; and such as are grown so long as to cross, or touch others, must be taken out in the winter, and the nearest shoot that is suitable confined to its place. Branches

Branches often put out in the summer from the lower parts of the tree, which should be observed, and either taken away or left on, as occasion requires.

When trees produce vigorous shoots at their extremities, then the branches below may be left on till winter, and then take them off, provided the tree is furnished with blossom buds; but if it is not, let that shoot which grows the most upright and nearest the stem, remain to receive part of the sap, and that will check the vigour of the others.

When a tree shoots but little at the extremities, and is full of fruit, then all the lower branches that can conveniently be spared must be taken off early in the summer: if it has but little fruit, it is a sign that the tree wants relieving with new branches.

When this is the case, there must be as many shoots left in summer, as can be conveniently laid to the frame of wood in the winter, without destroying the old branches which have buds for blossoms, till the new branches can be brought to bear; and the old studs or bearers must be taken

234 A T R E A T I S E O F

away, as new ones are produced to supply their places : and these new branches should be treated in all respects like a young tree, and not suffered to touch one another.

When a tree is become so weak that it makes few or no shoots, after it is arrived at its full size, then it wants new branches, and the way to recover them is to cut off a great many of the studs in the winter close to the bottom, and especially those nearest the stem ; which generally causes shoots to put out at the places from whence the others were cut : but if this is not sufficient, take a chisel the next winter, and cut into several of the strongest parts about one third of their thickness ; but these cuts must be made on the upper side of the branch, and a piece taken quite out, equal in length and depth ; this is a sure way to produce young shoots, provided the root be healthy.

When a dwarf is cut in the winter, all the moss and old bark should be clean rubbed off ; and the cankered parts cut away to the quick : this sort of management is very proper for either the pear upon the quince, the apple upon the paradise,

dise, or the plum and cherry upon their own.

C H A P. LXXXIV.

Of Pruning Horizontal Dwarf-Trees.

THE number of branches proper for horizontals must be the same as the last, and all the stems of the same length; but as their branches are laid horizontally, they extend much farther than a border of common breadth can contain, and are therefore better upon quarters, which must be prepared for them as directed for borders.

Their roots are cut in the same manner as other dwarfs; so is the manner of planting, though at a greater distance, for those that are the least vigorous should not be less than twenty feet asunder.

The only difference in their management is in the position of their branches, the one being fastened to stakes and hoops in an ascending manner; and the other laid quite flat (but I advise they should be
four

four leet long, before they are brought quite so low) about half a yard from the ground. These have two advantages of the other, first, by being so much lower, they are less exposed to the winds; and if the ground under them be kept clear from weeds, it reflects a greater heat to the fruit.

I have seen great crops of pears, apples, plums, and cherries, upon horizontal dwarfs, which I think is the most proper shape for trees of this sort.

Tho' I have directed these dwarf-trees to be planted twenty feet asunder, or more, yet I don't mean to have them extended until they reach one another; for there should be left a space four feet wide round every tree, to take a barrow on, either to carry weeds away or bring manure. They ought to have their winter-pruning as soon as they have shed their leaves, and the ground under them cleared of weeds and all manner of filth, and then covered over with coal-ashes one fourth of an inch thick: this will add salts to the soil, and dry the surface, both which are of great advantage to the fruit.

The

The ground on which these trees are planted ought to be very clear from perennial weeds, and especially the corn-bind or wild convolvulus, which are very injurious to trees, and very difficult to destroy.

C H A P. LXXXV.

Of Conical, or Convex Dwarfs.

AS grass-plats in gardens of pleasure are often adorned with flowering shrubs, I think if some parts were to be planted with the following fruit-trees, it would answer the same end, and be of equal beauty, and make a variety amongst the others.

(Viz.) The nonpareil, and d'Api apples upon paradise stocks, the Jargonel, and Robin pears upon quince-stocks, Cornelian cherry on its own root, the Duke cherries upon the paramdam stocks, and some of the best plums, all of which are beautiful both in flower and fruit; and also the minion fig, tho' it does not bear flowers, yet there is a variety in its leaves:

I should

I should chuse their stems to be no more than a foot long, but they ought to be taken from the nursery with five branches or more, the same as for a standard fruit-tree, and their heads should be cut the same way, as orchards every year.

That is, in such a manner as tho' Fig. 6. were placed above the 7th, and the 5th above the 6th, so as to appear like BC and D, in Fig. 4. but not more than a foot and a half from each other in height.

C H A P. LXXXVI.

Of Standard Vines.

I Have already said something concerning the management of vines planted in the manner of espaliers; but in places guarded from the winds, they may be brought to bear and ripen, without being supported by a frame of wood, if the soil be proper for them.

The ground on which they are to be planted must be prepared, and ordered in the same manner as for those against walls, and their roots and branches cut and dis-
budded

budded in the same manner, and planted four feet asunder every way.

The ground should be kept clear from weeds, and no more than one branch suffered to grow upon each plant the first summer.

In the winter or February after, they must be cut according to their strength; and such as have a shoot betwixt two and three feet long may be cut about a foot from the ground, and all the buds taken off except the two highest; for the three lowest seldom produce any fruit, and the shoots that they would make would only weaken the rest.

If a plant has made a weak shoot, there should be only the fourth bud from the lower end left upon it.

But as a vine increases in strength, so should it also in its number of branches, till they come to eight, all proceeding from the top of a stem or head that is not more than a foot high.

And at the time of winter-pruning there must never be more than the third, fourth and fifth buds left upon a young branch;
the

the part above must be cut off, and the lower buds also.

In summer all suckers proceeding from the root should be taken away at their first appearance, but those branches putting out of the stem, about a foot from the ground, must be preserved for bearers; as also such shoots as put out of old wood at the top of the stem; and as many of these shoots as are preserved, so many of those branches proceeding from the third buds left on at first (that is, the lowest buds left on the shoots in winter) must be taken off in the summer, for they can seldom be expected to bear, and all they were intended to do, was to produce such shoots as would bear fruit the next year.

I choose to leave these shoots upon the stem, or near it, to keep the head of the tree in a little compass, which could not well be done by those shoots which proceed from the third, fourth, and fifth buds that were preserved in the winter.

As soon as the vines have shed their leaves, take away the earth from the stem of every one of them a foot round, till the

the roots are almost bare; and let them lie open in this manner about twenty days: (if the weather is frosty it will not be the worse) then lay a spadeful of coal ashes or lime to the root of every tree, and cover them again with earth.

They must be many times pruned in the summer, for it will make the fruit ripen better; and as soon as three joints appear above the fruit, one of them should be nipt off, and all branches putting out of the bearers taken away at their first appearance, or cropt to one joint in length after: and such shoots as are designed to produce bearers the next year, must be kept as short as those bearing fruit, or else the winds will be apt to break them.

C H A P. LXXXVII.

Of Raifing, Planting, and Pruning of
Gooseberries and Currants.

THE gooseberry is a dwarf fruit tree, but of the meaner sort; yet the fruit is much improved by proper cutting, and a good soil.

R

It

It is easily raised from layers, suckers, cuttings, or from seeds, and should be trained up in the nursery with a straight stem: each tree should have six, eight, or more branches proceeding from it, for bearers, about a foot from the ground; and that which is the most upright must be tied to a straight stake, fastened in the earth near the root; and if the branch that is tied up be more than a foot long, the top must be taken off, and the lower buds likewise, leaving only six or eight at the upper end, in order to make shoots, which must be used as the former bearers; and as the stem advances in height, preserve the same number of young shoots at every foot in height; but no upright shoots must be suffered to grow (except the stem) nor any branches to cross one another.

Such young shoots as are designed for bearers, if their ends be dead, should be shortened a little in the spring, which will make the fruit much larger; and it is also necessary, at the same time, to take away all suckers from the root.

The soil which a gooseberry bears the best fruit upon, and makes the most lasting tree,

tree, is such as I have before mentioned for the generality of fruit-trees, but the depth required is not more than ten inches; but if they or strawberries be planted in a soil stronger, they will do better than in a loose sand or gravel.

I suppose there are many people who will think it not worth their expence to make any alteration in the soil for so common a sort of fruit; but I think those gentlemen who love to see things in perfection will dispense with it, for as there generally are strawberries planted upon the borders with them, a little improvement, if wanted, will be of service to both, and the expence will not be more than one fourth of what is required for fruit-trees against walls, because the borders need not be more than one half of the breadth or depth.

I think ten or twelve feet is the nearest that the trees should be planted to each other, for those at five or six (which is the common way) do in a few years so much shade the strawberry plants, that they are thereby rendered fruitless; and the pleasure expected in the walk adjoining is lost in the season for ripe strawberries.

I have juſt before given directions for the raiſing of trees in the nurſery, but there is ſomething to be obſerved in chuſing them to plant in places where they are deſigned to remain.

It is good to take ſuch as are free from moſs, whoſe rind is of a bright colour, and ſuch as have made ſtrong ſhoots the year before, at leaſt eight of them, at a foot from the ground, with one young branch going forward to lengthen the ſtem; this ſize is large enough to carry to places at a great diſtance. But if a tree be taken from the nurſery with ten branches, it is the better; for the greater number of branches there are taken off at the time of replanting, with the greater vigour will the tree grow after.

Note, If trees are not to be met with in a nurſery of the ſhape deſired, chooſe ſuch as may be moſt eaſily brought to them.

In taking up theſe trees, there ought to be care taken to preſerve as great a length of roots as poſſible; and likewise packed in ſuch a manner, as to prevent their becoming dry in the carriage; but if a tree is only to be removed in the ſame ground,

I should choose a larger tree, for then one of any size will grow.

Their roots must be cut by the rules before laid down for other dwarf-trees; and likewise planted at the same season, in an upright position, but not deep; the heads may be cut either before or after planting, and in such a manner as directed for their order in the nursery, but with a less number of branches left on, as some of the roots will be destroyed by removing.

I think six branches enough, besides the stem, at the time of planting, and if they are more than half a yard long, they may be cut to that length, and as they grow after planting, they are to be dressed as before directed for those in the nursery. But instead of eight or ten branches being left to each tree, whose stem is a foot in height, I would advise but six or seven; and if any of them be of a much greater length than the others, shorten them in the winter, by which the head will be more regular; and when any of them dies, or bears smaller fruit than usual, let a young strong branch be preserved for its place, and the old one taken out in the winter; but if

the young one naturally stands in a position more upright than the old ones, it must be confined lower, by a small stick put over it, and under those two old ones nearest.

Likewise observe, when you dress the trees in spring, to clear all moss from them; and by these rules a tree will be kept in health for many years.

The currants are to be ordered in all respects like the gooseberry, but they will not prosper so well in a very strong clay; there are various kinds, but the sorts most valuable for common uses are the white and red Dutch: there is good wine made of the black ones, besides both fruit and leaves are of use in medicine.

The strawberries upon the borders must be thinly planted, if good fruit of all kinds be expected: they must be at least a yard from the trees, and if hautboys two feet from each other, and of all other kinds half a yard; the runners must be pulled off at their first appearance, and no more roots suffered to grow than what are planted.

C H A P. LXXXVIII.

Of Barberries, and their Culture.

THERE are only two sorts of barberries, the one with seeds, and the other without; the former grows wild in hedges and woods, but the latter, which is most valuable, I have not seen any where but in gardens, generally growing wild in wilderness quarters, amongst flowering shrubs, where they are very ornamental, not only in the time of their flowering, but likewise, in autumn, their scarlet-fruit makes a beautiful appearance for a long time.

They are increased by suckers or layers, and though they are by nature of a larger growth than gooseberries, yet if they are cut the same way, it will make both the berries and the bunches larger, and reduce the tree to a handsome shape, without too much formality in it.

I don't think a tree of this sort would be disagreeable upon a grass-plot, amongst the fruit before-mentioned for that purpose;

pose; but if they are only designed for the benefit of the fruit, they may be planted upon borders as gooseberries are,

C H A P. LXXXIX.

Of the Ordering of Raspberries.

THE raspberry plant cannot properly be called a fruit-tree, yet as the fruit is valuable, I shall give my method of planting, dressing, &c.

I am only acquainted with four kinds, except the flowering sort, viz. the common small red, and white; the other two sorts are much larger, of the same colour, and are called rombullions; the former has the richest flavour, but in dry seasons they are apt to wither if they are planted upon sand or gravelly land, but will bear well on loam or clay, that is not too wet.

The latter sorts bear well upon any soil that is moderately dry, if there be four inches depth for their roots to grow in, before they are interrupted by a rock or the
e.

As there is no possibility of strawberries prospering under them, I therefore choose
to

to have the raspberries in a quarter or plat of ground alone, and not upon borders as goofberries and currants.

The proper time for planting raspberries, is, from the end of October to the beginning of March, in moist weather; and the ground should be cleared of quitch grass roots, and all other weeds.

The plants made use of for this purpose are no other than suckers, which rise annually from the horizontal roots that come from old stocks, and the strongest ought to be chosen, with as great a quantity of roots as can conveniently be taken with them.

If they are become dry in their removal, there can't reasonably be any fruit expected from them the first year; for which reason, I advise to have them cut to about half a yard long, for if they were left of a much greater length, the suckers that rise from their roots would be too weak for bearing the ensuing year. The plants, which are only removed from one part of a garden to another, may very easily have their roots kept moist, and likewise some earth adhering to them; there is no doubt but such plants will bear the first

first year, and likewise produce strong branches from their roots, fit for bearing the second year.

The roots of all must be examined before planting, and those fibres which are become dry and dead must be cut off; but the strong roots, if alive, should only have such ends taken off smooth with a knife, as were cut by the spade in taking them up.

I have observ'd raspberries planted about half a yard from each other, and sometimes nearer, upon beds of four feet broad, though with a space of two feet between each bed; and in a very few years, the rising branches, and those bearing fruit, deprive each other of the greatest part of the benefit which the sun offers to both; for which reason, I choose to plant them at three feet apart in the quincunxes order.

The manner of placing them in the ground, is the same as directed for dwarf-trees of the smaller sorts; and if the first spring and summer, after they are planted, should prove dry, they will require to be watered three times a week, and the number of the young branches rising from the roots should be examined in summer; and

if more than four appear from one plant, the weakest must be pulled off to make the other stronger, and the ground must be kept clear of weeds in the summer, tho' there may be a broad bean set the first year between every two plants.

The stem which was planted will be dead the next winter, for the parts above-ground do not live two years, for which reason they should be cut from amongst the others.

The fruit is always produced upon collaterals, which come from those branches that grew from the root the summer before; and if there be two, three or four at a root, cut a little off their tops, then plat them together, in such a manner as to make them stand upright, and dig the ground over, and they will require no other order in the winter.

The second summer after planting, there may six branches be suffered to grow from each root, and the winter ensuing they must be used like those the year before; and when the roots are come to their full strength, suffer eight or ten branches to grow from each of them, and in the winter give them the usual order.

C H A P. XC.

The Ordering of Borders, that have been properly made.

AFTER wall-trees have had their winter-pruning, the borders should be thoroughly cleaned from all leaves and weeds, and such sorts of manure applied as the nature of the soil requires.

For land which is naturally inclined to clay, coal ashes or lime are most proper; but for sand, gravel or creach, then foot, pigeon-dung, netting, or brine of equal strength.

After the nature of the soil is considered, and if the borders were made as before directed, each sort of manure prescribed for the different kinds of soils must be proportioned in the following manner, viz. for every perch of clay-ground, three pecks of lime, or four of ashes; and for sand, gravel, or creach, four pecks of foot, or two of pigeon-dung, or else three gallons of netting or brine.

As

As soon as the surface of a border is covered with any of them, let it be dug over with a three-grained fork, these instruments being less prejudicial to the roots of trees than spades.

But when the borders are thus prepar'd and ordered, I do not mean to have them planted with colliflowers that are to remain for a crop, or with early beans or pease, for these things are very prejudicial to fruit-trees.

If there never was any thing suffered to grow upon borders, it would be much better for all kinds of fruit-trees, especially peaches and nectarines; but as many people may, perhaps, think it a pity to lose the benefit of south borders for early crops, I therefore advise, that only such things be raised on them as may be taken off in the month of April at farthest, as young sallading, or the like; or, if lettices are planted in the beginning of November, or a little earlier, they will not do much hurt, provided they are pulled up by the roots in the spring, and not suffered to seed.

The borders should be always kept clear of weeds; and, about the latter end of July,
or

or beginning of August, dig them over again with a fork, and then cover them with such sort of manure as directed in the spring, about half the quantity; and after that, if the season is dry, water them plentifully in the evening, it will cause the salts that were dug in winter to mix with the earth, and those remaining upon the surface to continue moist: but never dig in weeds, or stable manure, and let the borders be always kept clean by sprittling and raking.

As to those borders on which espaliers or dwarfs grow, if they are planted with strawberries, suffer none to grow within a yard of the trees; and if they be kept at half a yard from each other, the fruit will be better for it, though it is best for the trees if there be none; they must likewise be dug and manured in the winter, the same as directed for others, which must be again repeated as soon as the strawberries are gathered.

As what has been already said of borders, relates only to those made according to the former directions, I will therefore, in the next place, say something concerning old ones.

CH A P.

C H A P. XCI.

Of the Ordering of old Borders.

MOST old borders that I have seen do not exceed four feet in breadth, many having an edging of box next the walks, and commonly filled either with large growing flowers, or else with pease, colliflowers, or some other kitchen vegetables; but these things, as I said before, are very prejudicial to wall-trees, especially peaches and nectarines, which I have observed in trees from one year old to twenty.

In the first place, the borders must be cleared of all those incumbrances, and not crowded with any thing more than what I have directed to be planted upon those new made; after that let them be trenched in the following manner, and salts added, according as the texture of the soil requires.

First, open the border at one end, the whole breadth, and about a yard in length, taking away the earth, till the uppermost
roots

roots are not covered above an inch deep; this done, if the soil be a clay, cover the part thus opened with coal ashes, sifted fine, about one fourth of an inch thick, or with lime somewhat more sparingly; then from the same compass of the surface of the border, as directed for the first opening, take as much earth as will cover the part thus manured about three inches thick, and what earth remains on that last opened, more than an inch deep above the roots, must be taken away; otherwise it will be of as ill consequence as planting too deep, by depriving the roots of a sufficient heat from the sun.

Trench the borders in this manner all over; and if they are too narrow, add to their breadth where it can be done.

For soils of a sandy loose nature, soot is the most proper, and must be used in the same manner as before directed for ashes on clay ground; or for want of soot, pigeon dung, about half the quantity: and if these things are done in the summer, or when the earth is dry, water plentifully in the evening all that has been trenched that day.

After

After the borders have been thus trenched and manured, they must in all seasons be ordered according to the directions given for managing those new made.

My reason for leaving a thin covering of earth upon the roots, is, in order to prevent the salts, contained in the manure, from entering them whilst they are too gross and acrid, for then they are apt to rent the pores, but after passing through the earth, they become more refined and fitter to be received by the roots; and that earth laid above the manure keeps it moist, whereby it will be more serviceable than if it had been laid upon the surface. Old borders are often annoyed by roots proceeding from espaliers, or standard trees which rob those planted on them; when this is the case, such roots must be cut thro', at the greatest distance they will admit from the walls, without injuring the trees belonging to them; and then the roots thus cut must be pulled out, otherwise they will putrefy, and be very destructive to the tender roots of those trees growing upon the borders.

S

There

There is another thing, which tho' seldom taken notice of, yet is of bad consequence to wall trees, and that is, their being shaded by standards or espaliers, whereby the sun is prevented from darting its rays freely upon them, and all such obstacles ought to be removed out of the way as soon as possible, although they don't drop upon the borders, but only shade the trees growing thereon by their height.

Having before only mentioned such things as may be suffered to grow upon borders having south, south-west, east or south-east aspects; yet as the other aspects are of as much service in the summer as those are in the spring, I will therefore give some few directions concerning them: and in the first place, before any thing can be either sowed or planted on them, they must be relieved with manure, and ordered according as the seasons and nature of the soil requires; after that is done, the same sorts of things may be propagated on these in the summer as directed for the others in the spring; but let none be allowed to grow high, or seed; and if it is a garden of
plea-

pleasure only, then a few annuals of a small or middle size may be planted on them.

There are two things more necessary to be observed; that is, the nature of the summer, and the quantity of fruit upon the trees.

If it be a wet season and a large crop of fruit, give the borders once a month a thin covering, that is to say, half as much at a time of the same sorts of manure as directed for them in the spring; but if the summer is dry, and the trees be either weak, full of fruit, or young ones of the last year's planting, then it is necessary to water the borders three times a week; but this must be done in the evening, otherwise the sun will attract too much of the moisture before it can descend to the roots of the trees.

Where there is a great quantity of walnuts gathered, I would advise to have the husks, so soon as taken off, spread about an inch thick on the borders where peaches and nectarines grow; and after the trees have been pruned in the winter, let them be dug into the earth with a fork. There is a salt in them which is destructive to insects, and strengthening to trees.

Where the sea-coast is near, the expence of other manures may be saved; for the water and the clay is the best that is for sandy soils, and so is the sea-sand for clay soils; but the water alone is not to be applied to the leaves or branches of any plant, though, when it is mixt with a treble quantity of fresh water, it is as proper to wash blighted trees with, as the mixture before directed for that use; but there should not be more than one half so much of it used as is before directed for ewring.

The blood of any kind of animal is of service to fruit-trees; and when a horse is let blood in a stable, as it is easy to preserve it, I think it is a pity it should be lost, for it is of as much service as an equal quantity of sea-water, and may be used in like proportion.

I am apprehensive that what I have said upon ordering of borders will be made a joke of by many, who will say, I attempt to give more than necessary trouble to those who have fruit-trees under their care; and they will presently tell where there are wall-trees thrive, and bear plentifully without any sort of border; or, upon such

where there are many flowers and an edging of box.

I own that a pear, apple, plum, apricot, fig, vine, and some kinds of cherries, will, where the soil is of a proper sort within, though it be covered with grass, gravel, or paved; and if the vines be low ones, the grapes ripen earlier, with gravel, or pavement near them, than if there was none.

But I never saw the best sort of peaches and nectarines, nor even some kinds of cherries, prosper well in any such situations; but were generally annoyed with the honeydews, and smother-flies, even to the destruction of the greatest part of every one of their young branches; which tends to the loss of fruit, or at least of good fruit: for where the upper ends of branches are killed, the others don't bear so good fruit as those that are whole; as I will answer for it they will, if the borders are made and ordered as I have directed, admit the trees have other things necessary done to them when required.

I could express where this practice has been successful in many places; but perhaps the owners would not like to have

their names mentioned, for which reason I will not enter upon many particulars; but this I will say, that in November 1750, I prepared a border for a gentleman, and planted it with fruit-trees of several sorts. Sixteen of them are peaches and nectarines, which have all bore fruit, many of them the second year, and never had the end of a branch killed; most of them are very extensive trees, and have been planted but four years, and under my care.

C H A P. XCII.

How to preserve Blossoms, and young Fruit from Frosts.

THE first thing destructive to fruits is violent frosts in the spring, which kill the blossoms and young fruit, especially of the apricot, for it blossoms earlier than any other sort. Trees growing against walls may, in some measure, be preserved from this mischief, by shading them with branches of laurel, yew, or beech, and in calm weather there is much fruit saved by this means; but if the season

season is tempestuous and windy, then part of the blossoms and young fruit are frequently beat down by the shades; yet, notwithstanding the disadvantage, I have observed more fruit generally upon trees that have been shaded, than those exposed to the weather, though against the same wall: I always found the branches before mentioned preferable to matts for shading fruit-trees, and that they were applied with the most success, provided they could be so fixed as not to be displaced by the winds.

After the trees have once been accustomed to these shades, it is not prudent to take them away too soon; for it makes the blossoms and young fruit somewhat tenderer than when they have been constantly exposed to the weather; and as the spring is a very inconstant season, we should not be tempted by two or three fine nights, to leave the fruit unguarded, before they have strength enough to resist any inclemency of weather, or any natural leaves to screen them from the cold.

Stone fruit ought to be guarded in this manner till they have quite shed their
S 4
blos-

blossoms, and pears till their first leaves are almost full grown.

When the weather is inclining to what we commonly call black frosts, as it often is in the spring, I have made use of another method to preserve fruit with great success, which is only watering the borders every afternoon when the trees are in blossom, and this has produced the desired effect; for in this sort of weather there being no dews in the nights for the trees to imbibe, their juices become thick and glutinous, and consequently slower in motion, whereby they less resist the penetrating force of the frost.

Perhaps some may object against watering, and say, that it is too cold and perishing in such sort of weather: but whoever shall be pleased to make trial, will find the contrary, for it encreases heat in the trees, by accelerating the motion of their juices, especially where the borders on which they stand have been prepared and ordered, as before directed. Where borders are old, and become poor by having had many crops growing upon them, or if they have been manured with dung that was

was not quite rotten, then add to every gallon of water one ounce or more of common salt; and if those trees that are shaded be watered once a week, it will do them service,

C H A P. XCIII.

How to prevent Caterpillars destroying Fruit upon Wall, or Dwarf-Trees.

I Shall not attempt to describe the various kinds of insects; but I have observed two sorts of caterpillars, or at least those of two colours, feed upon fruit-trees, the one black, and the other green: the black generally make their appearance in March, if the season be dry, upon the pear-tree, apple, and several others.

Sometimes there are great numbers of them, in a sort of kel or web; and if they are to be come at, I chuse to take them off, or otherwise they will disperse themselves to all parts of the tree, and there feed upon the blossom leaves, or their buds, before they are unfolded. After they have lived in this active state, sometimes they conceal them-

themselves, either in a bunch of leaves, or in a cavity of the rind of a tree, where many of their eggs are hatched the same summer, and become very destructive. I think some eggs are preserved the same way all winter; for when I have been dressing fruit-trees in February, I have found many of their eggs, and some kindled, though of a white colour, as I suppose they all are, before the air changes them, in old nail holes and under pieces of dead bark.

Which causes me to wash the walls, in order to destroy them; and I think the method of dressing dwarfs and standard-trees must have partly the same effect.

The green caterpillar that feeds upon fruit-trees, for ought I know, may be the same as those that were black at their first appearance, but by green food their colour may be changed, for the latter I have never seen so early in the spring as the former; but I have found them very prejudicial to both the young branches and fruit of the apricot, cherry, plum, apple, pear, currant, gooseberry, &c.

I never observed these in great numbers together in any sort of web or kel; but I have generally found them single, sometimes wrapt up in the extremity of a new made branch of the fore-mentioned trees, or otherwise in a bunch of blossoms of an apple, pear, plum, or cherry-tree, and sometimes on an apricot, with a leaf to cover them. In wall trees or dwarfs, whose branches are within reach, part of their ill effects may be prevented. If they be at the extremity of a branch, it will appear in a round knob, and they generally eat off the part they had wrapt together; which spoils the branch the next year. When they have inclosed themselves in a bunch of blossoms or young fruit, then they prove very destructive, by generally eating into all they had joined together, which causes much fruit to drop off soon after, and others when they are more grown.

Some of those that are but slightly eat, will continue upon the tree till the time of gathering, but they never make good fruit, being generally ill tasted, and many times have a white grub within them.

When

When the caterpillars are first perceived upon wall or dwarf-trees, if it be before or after they are wrapt up, I have prepared a brine the same as for washing of walls at the time of pruning, and therein dipt a brush or besom, and swept the trees all over; this has destroyed many, by beating some off and killing others. This work should be often repeated, if there be a necessity for it, as there generally is in dry seasons.

Note, I think a small engine would be the properest instrument for this work. I sometimes make use of a more effectual remedy upon wall or dwarf-trees, though it is very tedious to perform, but yet, I think, it may be practised by some gentlemen who have leisure to do it; for if they be curious in fruit, they will take pleasure in procuring them.

Viz. If the aforementioned fruit-trees be carefully observed every day in the spring, it will easily be seen when a bunch of blossom leaves or young fruit are joined together by a caterpillar: upon the first discovery of them, separate them with your hand, and kill the caterpillars; there
may

may be a young branch or a bunch of fruit saved by it, which otherwise would certainly have been destroyed. Whoever does this work as often as it is required, will never have much of their fruit destroyed by such insects; which, by long experience, I know to be more destructive to the fore-mentioned fruits, than any other cause that happens in the spring; though many will attribute the scarcity of fruit to blast, or lightening, or the branches being sun-burnt, which are the common constructions put upon the effects of those insects.

C H A P. XCIV.

How to preserve Fruit upon Standard Trees from being destroyed by Caterpillars.

WHEN standard-trees are properly ordered with cutting and dressing, they will not be much subject to be infected with caterpillars; for those trees that are not dressed at all, taking off the old rind, and cleansing the cankered parts, destroy many
of

of these insects, as also their eggs concealed in these places; and by keeping the branches thin and open, they are more easily shaken off by the winds.

Mr. Bradley compares these insects to silk-worms, which drop from mulberry trees in Italy by thunder; but I don't imagine that the cause of their falling is owing to the thunder only, for I suppose there generally are showers of rain descending at the same time, which beats part of them down.

He further says, that discharging of great guns near fruit-trees, will have the same effect as thunder, in causing the caterpillars to drop from them: but this scheme, I presume, will not often be put in execution, as few have it in their power, not being provided with guns; neither is there necessity for being at this trouble, suppose it would produce the designed effect; for watering is less expensive, and I think is as good a remedy against this evil. As most noblemen have at their seats engines for extinguishing fire, which are very proper instruments for watering orchards, or such trees as cannot be reached with a brush or
small

small hand-engine, if orchard-trees are watered all over with these engines two or three times a week, it will destroy many of the caterpillars; and the water falling on the ground will add new vigour to the trees, and increase the motion of their sap, which will cause greater plenty of fruit.

This should be done in the heat of the day, for then the caterpillars hang the loosest upon the trees, and are therefore more easily beat down, and the water should be mixt with salt. This work is not only necessary when the trees are in blossom, but also before and after; for, in the beginning of March, I have seen the caterpillars eat the blossom buds before they have been unfolded, and likewise the fruit, as before observed: but where engines are not to be had, I have known great service done by smoaks from damaged hay set on fire in the evening.

C H A P. XCV.

Concerning the Honey-Dews, and Smother-flies upon Fruit-Trees; and how to prevent their ill Effects upon such Trees as are planted in new Borders.

THE honey-dew is a glutinous substance, very prejudicial to many kinds of fruit-trees; for it contracts the minute vessels of their most tender parts, and prevents their imbibing and perspiring such fluids as are required in vegetable life, whereby some of the leaves and shoots never come to their proper shapes.

This noxious matter may easily be perceived either by its sweet taste, from whence it takes its name, or by adhering to the fingers when touched, as also by its glittering appearance on the youngest parts of shoots, and on the leaves before they are quite unfolded; which is the reason why their under sides are most blemished, because the side of the leaf first appearing, becomes the lowest when full grown.

A few

A few days after the honey-dew appears you may discover small insects on the under side of the leaves that are shrivel'd almost without motion ; yet the heat of one fine day will make them visibly increase both in bulk and strength, and likewise more in number. Though at first they have no appearance of wings, yet if the weather continues dry and warm for ten or twelve days, they will be furnished with wings, whereby they soon after take their flight ; but there are many successions of these insects, and honey-dews in summer, which prevents the thriving of many branches and leaves of fruit-trees.

It is imagined by some, that this clammy matter is perspired by the trees, and that the insects come thither only to feed upon it ; but by the former observations it plainly appears to the contrary ; for they are almost void of motion when first perceived on the trees, and therefore cannot be supposed to come thither for that purpose, but seem rather as though they bred where there are first discovered, because of their growing much during their continuance there, and being incapable, at their first

T appear-

appearance, of moving to distant places for want of wings.

Others say, that these insects are either hatched or brought up by easterly winds: and this opinion seems the most probable, for they generally increase most when the wind continues in that quarter; but I think the weather being generally dry then, is the greatest cause of their appearance.

I have seen them upon trees in due west aspects, and all others; in dry weather, but I never saw them upon all trees alike, even those that were planted against the same wall, neither upon all the young branches of one and the same tree, but I have generally observed the honey-dews to adhere the closest to the weakest trees, or to those shoots which are the weakest or most spungy; and wherever the honey-dew caused the leaves to curl, soon after there were smother-flies on their under parts. Undoubtedly all trees upon the same aspect, and all the branches of one tree, must receive the same outward cause, to be blighted, and one as much as another; by which it is plain, that the separate parts of a tree, or separate trees, are
in

In different states of health, because all do not receive the infection alike. I must own I don't know how the smother-flies are bred; perhaps they may be in the sap of the trees they are upon, but I rather imagine from eggs or spawn, first laid by insects of the same species upon the surface of stagnant waters, which being from thence attracted by the sun into the atmosphere, and carried by the winds to different places, in the shape and substance of the honey-dews, and lighting upon such branches or trees as are suitable for its reception, continues there till the insects are hatched and brought to maturity; but a great part of this matter falls upon branches or leaves of trees, where it seldom hatches, as may be seen by its glittering appearance on the leaves of the apricot, and several other trees that are healthful, which are more smooth and compact, when young, than those of an unhealthful peach and cherry, into which it penetrates; as also the plum, currant, gooseberry, and many others.

This pernicious matter is more injurious to the fore-mentioned trees (if weak or

their branches spongy) than any thing else that naturally happens to them; for it retards the motion of the sap, at the extremity of the branches, which prevents the fruit below from coming to any tolerable perfection, and damages the young branches to such a degree, that they are never after capable of bearing good fruit.

Besides, many trees are intirely killed thereby, if proper methods are not used to prevent it.

Tho' different kinds of smother-flies, or those of different colours, are found upon different sorts of trees, yet as they all either breed from, or feed upon the honey-dew, it therefore appears that all trees require the same care and management, to preserve them from these evils, for no tree prospers well when either the honey-dew or smother-flies are on the extremities of its branches.

But both are to be seen upon some trees in dry weather, and when there are not much dews in the night for the trees to imbibe, whereby they become less vigorous in their growth, and the tops of the branches become dry; whereby this glutinous matter adheres more closely, and the motion of
the

of the sap being flow, is less able to resist its penetration.

If trees are planted a proper depth, in borders made according to the former directions, and pruned according to the rules I have given, then there is nothing more required in this case, than to water the borders, in the afternoon, three times a week, in a plentiful manner: if the weather be dry, and the honey-dew appears upon the trees, this management will make the trees shoot, by rendering the salts near the roots more liquid, and add new vigour to the motion of the juices; and the vapours arising from the surface of the borders will cause dews upon the leaves, whereby the clammy matter will be prevented from adhering to them.

And if the season be wet, spread common salt all over the border, about eight ounces to each tree; for the more salts the juices contain which form the young branches, the more compact and smooth their leaves will be, and thereby less subject to the penetration of the honey-dews, than when they are composed of juices more

watery, whereby the leaves become very porous.

If trees are thus ordered at all times, when the honey-dew appears on them, neither it nor the flies can ever do them much injury.

C H A P. XCVI.

Of the Honey-dews and Smother-flies on Fruit-trees growing in old Borders.

Trees growing upon old borders that have not been improved according to my directions given for that purpose, and have been improperly pruned, must be ordered in a different manner to the former, for sometimes those trees are too deep in the ground, or the borders may have too much undigested matter in them, and not depth enough of proper soil; and if the roots be entered into soil that is too wet, be it either sand or clay, then trees will produce spungy shoots, which are liable to suffer by the honey-dews.

Or,

Or if, at the time of winter-pruning, there be too great a quantity of wood left in the trees, or wounded parts, by bruise or cut, then weak shoots are produced, which often become blighted in the summer, though pruning will remedy these disorders.

If the borders be impoverished by having either too much kitchen-stuff or flowers growing upon them, the trees will be too weak; and if the weather be dry, they must be watered plentifully three times a week, with one ounce of salt added to each gallon of water, or with the same mixture prescribed for vines, according to the directions given for managing old borders, and trencht as soon as possible.

If the flie be strong, double the quantity of salt before directed, and water the bottom of every tree before the foot or lime is laid on at the time of trenching.

But if there is not an opportunity of trenching, nevertheless water thus mixed must always be used for the above purpose, and the borders dup over with a three-tined fork, that the moisture may the earlier reach the roots of the trees.

I have found these methods successful, even when the flies have been very strong upon the trees, and have, in a few days, destroyed many of them, and caused the trees to shoot vigorously.

There is another method that more expeditiously kills the flies, but it is subject to kill too many of the leaves, if made too strong, and is also detrimental to the fruit.

However, the manner that I have performed it with the greatest success, is this : mix water with salt, two ounces to the gallon ; then take such a brush as is mentioned amongst the instruments used in gardening, dipt in the water, after the salt is quite dissolv'd, and wash the trees with it in the evening, observing to begin at the bottom of the tree, and make all the strokes upwards : by that means the water will fall chiefly on the under side of the leaves, where it is most wanted. This will occasion the infected leaves to drop off the trees, but will not injure the healthful ones ; and if it be not too late in the summer, the trees will make good shoots after, even such as will produce fruit the next year on peaches or nectarines.

C H A P.

C H A P. XCVII.

How to preserve Fruits from Ants, Birds,
Wasps, Flies, Snails, &c.

THE ants are much complained of for destroying fruit and leaves; but when borders are rightly prepared and ordered, they cannot live; nor in old borders, after they have been trenched and watered with the composition mentioned for that purpose; but it ought to be observed that the ants in a border are generally near the wall; for which purpose there ought to be a little drill made with a hoe close to it, and that part watered the most plentifully.

Against old walls either of brick or stone, they are the most troublesome, for as they lodge in the nail holes, the watering of the borders only has no effect upon them: but the walls should be watered all over with two ounces of salt to a gallon of water.

It is best to do it with a small engine, the force of which will drive them out of
their

their holes : but I should chuse to have the walls pointed with lime mortar as soon as the trees have shed their leaves.

I have destroyed many by suffering them to eat into a nectarine pretty deeply, then dipping it into a pan of fair water by which they leave the fruit, and if it be after laid upon, or near the tree, there will others resort to it, and may be killed the same way.

The horn or shell snails are likewise noxious to fruit-trees; and should therefore be carefully sought for in the spring and summer every morning, for then they appear most, and are soonest destroyed; and at the time of winter-pruning, it is good to kill all that can be found in their holes.

Cherries, and other fruits against walls may be preserved from birds by nets; but this method is not sufficient for guarding peaches, nectarines, plums, pears, grapes, figs, &c. from flies and wasps, which will be sure to have a taste of the best fruit, notwithstanding all our care.

As to destroying of wasps, I can give no other directions than what is generally
prac.

practised, by demolishing all the nests that can be found in or near a fruit garden; and as these are insects of great increase, the earlier this is exercised in the spring the better; for if we consider that every nest is the production of one wasp that has lived all the winter, 'tis easy to imagine that the killing of one in the spring, at their first appearance, is of as much service as destroying a whole nest later.

Many wasps and flies are also destroyed by placing near the fruit-trees phials half full of water, and making the mouths of the vessels sweet every day with honey, coarse sugar, or the like.

Yet, as I said before, the earlier in the spring these devices are used, the more good they will do.

But the most effectual guard that I know for grapes, is cases made of crape, gauze, or the like sort of stuff, large enough to contain a bunch, and tied round the stalk just above the berries, which may be done without bruising them; this gives a deal of trouble; but the best bunches deserve to have it bestowed on them, provided they can thereby be preserved.

I have likewise preserved nectarines by nailing close to the wall a large piece of crape so as to cover a dozen or more that grew near together.

C H A P. XCVIII.

How to gather Summer-Fruits.

ALL kinds of summer fruits must be gathered in the morning, or else they will eat flat.

Cherries should be full ripe before they are gathered, which may be known by their colour, for the reddest sorts will be changed on the sides next the sun to a very deep colour almost black; and those of the paler kinds will be quite red on the sun side.

In getting them from the trees, their stalks should be nipt off from the branches by the thumb and fore finger; for pulling breaks off the buds that might produce branches or blossoms the next year.

When plums are ripe they will quit their stalks easily; if you give them the least twist with the fingers; but they ought not
to

to be much handled, for it takes off the blue which is their beauty.

Peaches and nectarines are much the best when they are ripe enough to fall from the healthy branches of their own accord, and never ought to be gathered too early.

If apricots in growing don't touch each other, they seldom drop off the tree before they are too ripe for most palates, nay some times their upper end will become rotten before they naturally quit the stalk; they are generally deemed in the greatest perfection when the part next the sun becomes a little soft, or the end begins to open. It is an old and very good custom to gather a fig when there is a drop of water hangs at its end, for that is a certain sign of its being ripe; but there are some sorts that are subject to burst, and never has a drop but when the small end quite to the stalk is become nearly of the same colour as the large end, then it is certainly ripe.

Grapes seldom rot upon the vines by being too ripe, and those appearing the most transparent are always the ripest; but all berries on the same bunch are seldom
ripe

following method, viz. get a large quantity of moss well dried; and a number of earthen jars sufficient to hold the fruit, then place a layer of moss and another of pears till the jars are full, and stop them up with plugs as close as you possibly can, which done, cover them with sand a foot thick or more on every side, and let them be opened one by one as they are wanted for use: if a few do happen to rot, the moss will receive their moisture, and prevent them from injuring the others.

Such as are designed to be used first after they have been couched, may be laid upon a boarded floor or shelves in the fruiterie, where they ought to be kept dry by opening the windows in fine days, but in rain or frosty weather, the windows must be kept close stopt, to prevent the air from having any effect upon the fruit; and if the weather continues severe, they must be covered with straw and cloths.

The properest rooms for fruit are those with the windows on the south side, and that can either have a fire in them, or are next to some stove, or other room where one is commonly kept, which ought to be

both in frosty and rainy weather ; for if pears are not kept dry, they are apt to rot, and will likewise taste musty.

Such sorts of apples as are designed for the table, must be ordered in every respect as pears ; but those for baking, &c. may be laid in large heaps, only observing to move them sometimes, and pick out those that are rotten. Walnuts may be preserved by the same means that grapes are, after they are cleansed from their husks and rubbed quite dry, as also small nuts and filberts, saving that these two sorts last mentioned need nothing to pack them in but their own husks.

Quinces may remain upon the trees till the end of October, and are generally used soon after gathering ; but they may be preserved from rotting till February, if it be desired, by the method as pears and apples are kept.

Note. If the plugs before mentioned have rosin melted over them, it will cause the fruit to keep better ; and where there is conveniency of doing it, I would advise to have the jars placed in a deep cellar,

Med-

Medlars ought not to be gathered till the end of October; and then they have a very austere taste; yet when they are become rotten, are valued by many; and to cause their decay, or to bring them to use early, they may be laid in wheat bran, made moist with fair water, to cause a fermentation.

They ought to be laid in a box or tub, with a covering of moist bran in the bottom, after that a single layer of fruit, but not to touch each other, and upon them lay a covering of bran an inch thick. After that, five or six layers of each may be laid alternately, but there must be a covering of bran at the top, and as it becomes drier, there must be more water poured upon them; by this means they will be in perfection in fourteen days time; but if they be lay'd thin upon dry straw, they will remain sound for two months. For to keep them the longer in eating, I would advise to have three fourths remain dry till others begin to be fit for use, then lay a part to ferment as before; and before this last parcel is consumed, those laid dry will begin to decay naturally.

A
CATALOGUE
OF
FRUITS.

APPLES.

THERE are great variety of apples in England; but I think a few of the best kinds, that follow each other in ripening, will be sufficient to serve the whole year, both for deserts and for the kitchen; and as this sort of fruit is well known, the different size, shape, &c. needs no describing.

The Margaret apple is first ripe for deserts; it will bear upon a standard grafted upon a crab-stock, or upon a paradise-stock, from which it is earliest ripe, and the fruit the largest, either against a wall, or in any sort of dwarf; and I think all apples for deserts are the best from dwarf-trees.

Codlins, common, and Kentish, are the first for the kitchen, and will bear upon their own roots in espaliers, or will make standards if grafted upon crab-stocks.

The summer Scarlet pearmain is a good fruit for either table or kitchen use, and will bear on standards.

The golden pippin is good for many uses, and I think the fruit is much larger and better from a dwarf-tree than a standard. I have heard gentlemen much recommend the smallest, and thought them to be of a particular kind; but I really think there is but one kind, and the difference that appears in them is only owing to the vigour of the trees or different soils they grow in; for I always observed that if a tree grew in dry soil, and made but little shoots, yet bore plentifully, then the fruit was smaller, and earlier ripe than those that are larger; but if the large ones come from trees that grow upon land not too wet, then they are as well tasted when ripe as the small ones.

Kirton or crackt pippin, aromatic russet, Drap d'or, Wheeler's russet, Royal russet, French or grey rennet, nonpareil,
2
red

FRUIT-TREES. 295

red calvil, and l'Api, are all the best sorts of apples for the table, and the latter kind will keep while the others ripen on the tree.

The summer pearmain, Holland pippin, golden rennet, the hanging apple or short stalkt russet, Bassen pippin, royal pearmain, lemon pippin, orange pippin, Bridgewater pippin, Dr. Barnard's apple, partridge apple, stone pippin, and winter pearmain, are all good apples for the kitchen use, and with codlins will serve every day in the year, and make healthy standard trees when grafted upon crab-stocks.

The fire, redstreak and woodcock apple, are all good for cyder, and are proper to plant in fields, by reason they are not pleasant to eat raw.

A P R I C O T S.

The masculine is a small round fruit, and is ripe in the beginning or middle of July, but not the best bearer, for it blossoms early, and they are subject to be killed by frost, except its branches are very

well covered at the first appearance of the blossoms.

The transparent is larger than the former, and of a pale yellow, or whitish colour, and is ripe in the beginning of August. The tree is not vigorous, which renders it the fittest for an espalier or dwarf; but if it is not planted in a proper soil, the extremities of the young branches are apt to die in winter.

The Brussels is a middle-sized fruit, pretty full of bright red spots on the side next the sun, and ripens in the beginning of August; the branches of a year old are of a bright brown colour.

The orange apricot is the most common, and the best bearer; it is a large fruit of a roundish make, the side next the sun is markt with red, and it ripens most commonly in August.

The Turkey is the largest, tho' somewhat flat in its make, without being much markt with red, and ripens somewhat later than the last, and not so good a bearer.

There is a small apricot which ripens with the Turkey; it is of a roundish shape, and

and a deep yellow colour both without and within, the flesh adheres to the stone, and the kernel tastes like a sweet almond; the tree does not make much wood, neither does it bear very well.

C H E R R I E S.

The small May cherry, May duke, Kentish, Flemish, morellas, black and white hearts, are all very common. But there is a late duke much resembles the May duke in size, and colour, but is at least twenty days later before it ripens; it is also something longer in shape, as also the leaves, than those of the former.

The wild black and red cherries are well known in most parts of this kingdom. The black corroon, and lukeward, are not much unlike the black and white hearts in colours, but are rounder and not quite so large, tho' as well tasted, better bearers, and make healthier trees, for which I think they ought to have the preference.

The amber cherry is of a middle size, makes a healthy tree, and bears well; its name tells its colour; the fruit has a pleasant

the same that bears the name of the Gascoin heart at Ragnal in Nottinghamshire. The owners of each place, at the time they were planted, were both curious in fruit: the one his late Grace the Duke of Rutland, and the other Refin Mellish, Esq; And by what description I have had from several gentlemen of the fruit, it is the same cherry as the former; but a fruit of a valuable kind has often many names given it, for undoubtedly it has many admirers, who are apt to call it by the name of the place where they first saw it, or from the nobleman's or gentleman's name who owned it.

As for instance, I have in less than four years past, near Sleaford in Lincolnshire, met with a different kind of cherry to any of the former; it is called the Baramdam, which is the name of the place where it grows, in a perfect wild manner, so that not any one can give account of their being planted. Mr. Pattison the proprietor of the land, and present inhabitant, is now about sixty years of age, who told me their number was greatly increased in his time; and he further added, that the
 same

same land had been the property of his father, and grand-father, both of whom he knew very well, but neither of them was ever able to give him any account of its being planted. And I am by just reasons prompt to say, there is no marks of art in any part of the Holt, but they increase by suckers like black thorns, and bear upon as small bushes. I have more than once curiously examined them; for, soon after the time that I first saw them, I entered into a contract with the right honourable Lord Robert Manners, which engaged me to reside the greatest part of my time at Bloxholme, which is no more than five miles from Baramdam. I have got some plants of the kind under my care, which thrive well, and bear plentifully; tho' before I saw the original Holt, I had been told they would not thrive in any other place; but I find them quite to the contrary, for they will grow and bear upon moist spongy land, where other cherries will not live long. This I have seen near Ancaster, where I bought some young plants, and there was a larger tree in that ground than any one at Baramdam; it was quite healthy and free from
mois,

moſs, notwithstanding its roots were in water the greateſt part of the year.

They will root well the firſt year of laying, and I think that the beſt way to propagate them; for the common kinds made uſe for ſtocks are not ſo good, being ſubject to make ſtrong downright roots, whereas theſe are very fibrous, and grow very near the ſurface.

I have propagated the duke cherry upon them, and it is not ſo ſubject to blights as it is upon the wild black or red, tho' it does not make ſo ſtrong ſhoots; but I think 'tis the better for that, for dwarfs or eſpaliers.

The trees upon their own roots never grow to be large ones, and the leaves are ſmall and ſmooth, and are of a bright colour; the young ſhoots are ſmall, much like thoſe of the morella, and bear their fruit like them, the greateſt part of which ripens in Auguſt, and but few in July.

It is a middle ſized round cherry, of a red colour, and its taſte is not quite ſo ſweet as ſome others; tho' it is not a ſour cherry, yet it has ſome little flavour of bitter in it, like the wild black.

Moſt

Most other kinds of cherries are the longest lived upon dry soils, admit it is not a loose gravel or sand; they prosper well upon a strong loam, and the deeper it is before it comes to the cold clay, the better; 'tis bad to have water, sand or gravel too near the surface, but they will thrive very well if there is a loose creachy stone or rock within a foot of the top.

FILBERDS and NUTS.

There are two kinds of filberds, both thin shelled; the skin upon the kernels of one is red, and the other white, that is the only difference in them, for their tastes are both alike. As to halse-nuts there are great variety of them, but the sorts most commonly planted in gardens are the large ones, called the Spanish and Lombardy nuts, both have thin shells: the cob-nut is very large, but the shell is thicker than the former.

F I G S.

Tho' this is a very rich fruit, yet there are not so many admirers of it as of others,
for

for which reason I shall only mention a few sorts that are the best bearers.

First, there are two white sorts, the one large and rather long in its make, but the stalk is short; the other is less, and of the shape of a button; the pulp of both is white, and so is the skin, but they are well tasted; and many of their fruit will resist the winter's frosts; and that which puts out in the spring ripens well, which makes them good bearers, but both require walls.

There is a middle sized blue fig, of a short make; it bears well upon the upper ends of the last year's shoots, and many that appear in autumn will live all winter; it is very thin skinned, and the seeds are not very large, with a rich pulp of a red colour, which renders it a good fruit; but it requires a wall.

I have seen a large fig of a dark purple colour, has a long make, and large leaves more divided than most others; it is not a good bearer, without much care; for if it is too full of wood, the young branches are killed in the winter, and that fruit which comes upon the branches of the same year seldom

seldom ripens, but that which does is extremely good; it is called the Genoa fig.

The Vernifingue fig is pretty large, of a brown colour, and round make, pointed a little at the stalk; the pulp is very rich, and the skin is so thin that it generally cracks when ripe; this tree, and the two last, require to be matted in the winter, if the autumn fruit is expected to live.

There is a small fig, that has a green skin when ripe, tho' the pulp is red; I have seen it bear very well on a low standard, or sort of espalier, and is not at all inclinable to grow high, or make long shoots.

The minion fig is very small, of a brown colour; the tree is always low, and will bear without the assistance of a wall.

There is a blue fig of a middle size, very red within, but the pulp is not so melting as some others; yet, as it requires but little trouble, I would advise the planting of it, for it will bear, and the fruit will ripen very well without a wall; it is called the dwarf-fig.

I have

FRUIT-TREES. 305

I have lately had two kinds recommended to me for extraordinary good ones, but I have not seen their fruit; the one is called the Hanover, and the other the Cyprian fig, but what perfections they have I don't know.

GRAPE S.

There is no certain time to be fixed for the ripening of grapes, but the earliest are called the July grapes: there are the white and black, both small, with large seeds in them, and are liable to be eat with flies, if they are not guarded from them with bags of crape or the like.

The black and white sweet waters: the berries of both are round, but not of equal size; for there are some as large as the May cherry, and others, upon the same bunch, no bigger than a small corn of shot; but those that are large are very good, having a thin skin, and full of a pleasant juice, when ripe: they make very thick shoots, but not long ones; and as their leaves are large, their branches should be laid at a great distance from one another in the summer.

X

Note,

The white muscadine is one of the most common grapes, and it bears and ripens as well as most. The bunches are of a middle size, so are the berries, which are of an amber colour when ripe, full of a pleasant juice, have a thin skin, and the kernels are not too large. The vine makes long healthy shoots, of a pale brown colour, but not thick; the leaves are of a pale or yellowish green, and some of them are variegated with white in the autumn.

There is one called the royal muscadine, which differs from the white muscadine only in this, that the berries and leaves are of a darker green.

The black Frontiniac. The bunches are long, and the berries thinly hung upon them; and at the time that some are ripe and of a dark brown colour, others will be green: the shape of both is longish. They are a good grape, but have not much of the Frontiniac taste; the leaves are large, and turn brown in the autumn, so do the shoots, which are strong and of the same colour.

N. B. These kinds of grapes already mentioned will ripen in a good season and dry soil, either in espaliers or standards.

The following forts all require walls.

The brick grape is as plentiful a bearer as any I know, and will ripen against a wall any year, with proper order: the berries are of a flesh colour; their skin thin, but full of very sweet juice; they are of a longish shape, but closely placed to each other on the bunches, which are but small, and often grow three of them upon one branch: the shoots are long and small, of a pale colour; the leaves, when young, are meally, but in the autumn change to a dark red, variegated with a pale yellow; they are not large, nor much indented on the edges, but have always an uneven surface.

The claret grape is well known by its juice, which is four, and red as claret; the leaves are large and of the same colour.

The black Spanish or Alicant grape, has very large bunches, and also large berries, of a round shape, but a little flat at the end: when ripe they are of a dark brown colour, thinly hung upon the bunches, with some quite green amongst them, but the ripe ones have a pleasant taste; the leaves and shoots are both large, and of a red colour in the autumn. It is a very good bearer.

The

The red Hamburgh is an excellent grape, and is sure to ripen in a good summer: the berries are very large, and finely coloured; if they hang their full time, some of the bunches will turn black.

The black Hamburgh ripens a little after the red, and has all the good qualities of the other: the leaves are large as well as the shoots, and should be nailed no less than a foot apart, in the summer.

The grape called by some the raisin grape, and by the French *Le Sanmoireau*: the berries are of a long shape, very large, and of a pale brown colour; they have a very long stalk, and hang thin upon the bunches, which are pretty large; the fruit eats fleshy, but has a very pleasant juice; the leaves are very large, and so are the branches, which bear well, if they are laid thin against the wall.

The white Frontinac is a grape of a very sweet and perfumed taste: the berries are round, and the greatest part of them are pretty large, and when full ripe have a fine white dust on them, and the side next the sun is sometimes a little spotted with brown: this vine bears very well, and the fruit will ripen in some seasons without any

artificial heat, but earlier with it; the leaves are of a middle size, so are the branches, which are of a pale colour.

The blue Frontiniac is much like the former, in ripening and taste, and so are some of the berries; but there are many small ones upon a bunch, except they are guarded from frosts in the time of blossoming.

The grizeled Frontiniac is in size like the former, but the colour is yellow, mixed with a dark red or brown. It is higher perfumed than either of the former, but does not ripen so well without the assistance of fire, which would improve any of the eight last mentioned sorts.

The following kinds scarcely ever ripen in our climate, without artificial heat, viz.

The Tokay is an admirable grape, when in perfection: its bunches are very large, so are the berries, and of a flame colour; their juice has a rich flavour, somewhat like the Tokay wine.

The Lombardy is a very large and beautiful grape, finely coloured with pale red on the sun side, and of that circumference that the berries next the wall partake very little of the colour, for want of sun, and do not ripen so well: it is one of the shouldered

FRUIT-TREES. 311

dered grapes, or such as appear to have three bunches upon one stalk, and the side bunches are pretty near as large as the bunches of several kinds: I have known a bunch of this kind weigh seven pounds.

The St. Peter's grape. The berries and bunches are of the same shape and size as the last mentioned, but of a green colour, and, when made ripe by fire, are covered with a white powder.

MEDLARS.

I am not acquainted with many kinds of this fruit, tho' I have observed a variety both in the trees and fruit; for some have pricks like thorns upon their branches, and others have none; and some shoot more vigorously than others, with broader leaves; and the fruit of one is much larger than that of another. But I think the tree without pricks upon it, which bears a small sort, is much better fruit than the other; for it has a much smaller core, and the pulp is of a pleasanter taste.

MULBERRIES.

I know but two sorts of mulberries, the common black and the white, whose fruit

and yellow on the other, but when full ripe it is much shrivel'd; the pulp is melting, with plenty of rich juice; and it ripens at the latter end of August and beginning of September.

The Newington nectarine is both large and beautiful; its colour is almost all scarlet without, as also within near the stone, to which the pulp adheres closely, and is very melting and full of a pleasant juice; it ripens in September.

The Roman nectarine is an excellent fruit of a large size, and a round make, with a dark colour on the side next the sun, but the other is yellow, and when full ripe it shrivels; the pulp is then full of a rich juice, and very red at the stone, to which it closely adheres; it ripens in September.

Temple's nectarine is of a middle size, and a longish shape; and not of so dark a red as some others neither without nor within; but the pulp is not inferior to any in taste: it ripens in the beginning or middle of September.

The Vermash, or Peterborough nectarine, is of a middle size, round shape,
and

and always of a green colour; and tho' 'tis so late as October before it ripens, yet if the tree is properly ordered, the pulp is tender and full of a pleasant juice.

PEACHES proper for a small garden.

There is not a necessity of planting so many peaches as pears, for the former are not in eating much more than three months, and the latter may be so ordered as to be in use the whole year.

I don't think it in the least necessary to describe all the kinds of peaches I am acquainted with, for there are many not worth any one's observation; therefore I shall only mention a few that are known to be good, and such kinds as are in eating the whole season: and those gentlemen that are desirous of greater variety may be furnished with names in other catalogues; but if they consult more than one, 'tis possible they may find more names than differ in sorts of fruit; for I have observed several changes in the names of this kind of fruit, within these thirty years last past: sometimes 'tis done by a person's liking the
fruit,

fruit, and not knowing its name, calls it according to his own fancy, and after that recommends the kind, and from thence others are propagated and called by this new name: again, there are some that are actually known by two or three names, occasioned by those who have wrote catalogues of this kind of fruit, one author thinking it not material to mention all the names belonging to one sort, calls it only by one, and then another describes the same fruit by a different name; which causes some readers to imagine, that there are more separate kinds than there really are.

There are many kinds of early peaches, which are called by the name of Nutmes, Troy, Capuchine, &c. but I think they are only proper for those gentlemen that have a great number of walls; for at the time they are ripe, there are other kinds of fruit in perfection, which much exceed them in goodness.

The white Magdalene is the first early peach that I recommend. It is a middle sized fruit, of a round make, with a deep furrow on one side; is of a very white

white colour, except when fully
the sun, and then that side is
faintly markt with red. The pu
melting, and parts from the st
which it is sometimes a little rec
ways full of a rich juice. It ge
gins to ripen about the middle or
of August.

The Montaban is a middle si
almost round, with a cleft on one
not pointed: 'tis of a bright re
except a little next the wall which
the flesh is melting and well tast
sometimes red at the stone, from
parts freely; it begins to ripen at
end of August, and will hold
near a month: the tree is a goo
and makes plenty of healthy bra

The minion is a tender kind
being very subject to the smother:
less great care is taken; but whe
is in good order, the fruit is larg
a bright colour so far as it is expc
sun; the pulp is full of a rich jui
very red round the stone, which is
for the size of the fruit: it ripe

latter end of August, and the greatest part of September.

The Royal George is not one of the largest peaches, but the tree is generally a good bearer; the fruit is of a round make, and no sort of nipple at the upper end; it has a cleft on one side, and flat at the stalk so far as it is exposed to the sun; the skin is of a deep red with a down upon it, and the other part is white and full of small red specks; the flesh is melting, and very red near the stone. It ripens in the beginning of September.

Smith's early Newington is a middle sized peach, of a roundish make, and a fine red next the sun, with a soft down upon it, but the other side is of a pale green; the flesh eats firm, and its juice is very pleasant, and the stone is red. It ripens at the latter end of August, and beginning of September.

The Nobles is a large peach almost round, and marbled on the side next the sun with a dark red or purple colour, but the other side is of a pale green; the pulp is very melting, of a greenish colour, is full of a pleasant juice, and comes clean
from

313 A T R E A T I S E O F

from the stone. It ripens in the beginning of September.

The Violet peach is a large fruit, and not inferior to any in goodness, for the pulp is quite melting and full of an extraordinary pleasant juice; 'tis of an oval shape, and the side next the sun of a purple colour, with a little down upon it. It ripens at the latter end of September.

The Admirable, so called from its size and beauty, for it is very large and of a round shape, finely coloured with red on the side towards the sun; the flesh parts from the stone, and is of a purple colour; and though 'tis not so soft as some others, yet it has great plenty of juice that is well tasted. It ripens in the latter end of September.

The Portugal peach is of a large size and a round shape; the side next the sun is finely coloured with red, and has a soft down upon it; the shape is even and almost round; its pulp is not so much melting as some others, but the juice is pleasant; and the flesh is red at the stone, to which it closely adheres. It is a healthy tree, and the fruit ripens late in September.

The

The royal peach, or pavié royal, is one of the larger sort, and of a handsome round make; the colour is almost all red, but paler next the wall than it is next the sun; the flesh parts from the stone and is of a red colour round it, and full of a rich juice; it ripens at the latter end of September; and the tree must be carefully observed and watered with a proper mixture, or else it will be blighted, if the soil is not very suitable.

The Italian peach is a middle sized fruit, of a longish make, and dark red colour on the side next the sun; the flesh is melting and full of a pleasant juice, it is red next the stone, and ripens at the latter end of September; and the tree is a good bearer.

The Chancellor's peach is a middle-sized fruit, of a bright red colour covered with down; the pulp is yellow, except near the stone, where it is red, and full of a pleasant juice. It ripens at the latter end of September, and the tree bears very plentifully.

The Purpree, or purple peach, is a large fruit of a dark red or sort of purple colour;

lour; the flesh is yellow and melting, with plenty of pleasant juice; it parts from the stone where it is red; and ripens at the latter end of September.

Teton de Venus, or the breast of Venus, so called from its being shaped like a woman's breast, being deeply clefted on one side, without a sharp point at the end, but is plump and round on each side the cleft; the fun is somewhat longish, and has a little red on the side next the sun; but the flesh is white, and full of a pleasant juice; and it ripens at the latter end of September.

The old Newington is known and admired by many; 'tis one of the largest sort, and has a handsome round shape; the side next the sun is of a beautiful red, and so is the flesh next the stone; and when the fruit is perfectly ripe, none has a pleasanter juice, nor in greater quantity; and the pulp is of a fine yellow colour next the skin, it is melting and not too soft; and ripens in the beginning of October.

This tree ought to be left very thin of wood, at the time of winter-pruning.

The

The Rombullion is a pretty large peach, of a fine red colour next the sun, with a deep furrow on one side, and rather longish in shape; it is very red at the stone, from which it parts; it is melting, and the juice is well tasted for a late peach, for it does not ripen till October: the tree bears well, but the branches should be kept thin.

The Cambray is a middle-sized peach, somewhat longish in its make, but not much red, tho' the pulp is melting, and has plenty of juice for a late peach. It ripens in October; and the tree is healthy, and a good bearer.

The Persique, or the late Admirable, is a very large peach, of a roundish make, with a little nipple at top; it is red next the sun, but the other side is of a pale green; the flesh parts from the stone, next which it is of a pale red; it ripens in October, and if the season is dry and warm, the fruit is very good; but the young branches should be at a great distance from one another, or else the fruit is apt to rot: the tree is healthy, and bears plentifully.

The Catherine peach is a fine large fruit, of a round make, and of a beautiful red colour on the side next the sun, but the other is white; the juice has a pleasant taste, and the pulp is improved by lying three or four days before it is eat; it does not part from the stone, but is very red; it ripens in October; and some of them will continue a considerable time without rotting, if the season is fine, and if neither the branches nor fruit be left in too great a quantity, for the tree is a plentiful bearer.

There has been a peach lately recommended to me by the name of the Ham-skirt, but I am not acquainted with the fruit, nor do I know the time of its ripening.

QUINCES.

There are many kinds; but the only sort that I would chuse to plant is one of the make of the Buree pear, and about as large; the tree is healthy and of a larger size than others, and bears plentifully most years. It is called the Portugal quince.

P E A R S.

P E A R S.

The earliest pear that I know of any value is the petit muscat; it ripens most commonly in July, tho' I have known it some years ripe at Midsummer against a south wall; it is but a small pear, somewhat long in its make, of a yellow colour, except on the side next the sun, which is of a dark red; it has an agreeable taste, somewhat perfumed, and if the tree is kept in good order, the fruit eats moist, but if the tree is too full of old wood, then the fruit is not good.

I never have seen it grow upon standard-trees, but have known it to do extremely well and bear plentifully upon wall-trees, espaliers and dwarfs. As this pear ripens so early, it will do extremely well against a north-east or north-west aspect, for in June both these walls receive several hours sun.

The muscat Robert is sometimes called the Queen's pear, or the amber pear, from its yellow colour. It begins to ripen not more than a week later than the former;

it is somewhat larger and rather rounder in its make, has a longer stalk, and bears in clusters: it has a very pleasant flavour, without being either harsh or meally.

The young shoots are of a yellow colour, and as they are long and weak, require to be supported either by nailing to a wall or in an espalier, or confined to stakes either concave or horizontally: it does not require any better aspect than the former; but in a garden where there is room, I would chuse to have one against a wall, and another in some kind of dwarf, that they may be the longer eatable.

The Citron de Camus, is a middle-sized pear, more long than round, but not sharp pointed; it is of a pale green or yellow colour, and sometimes faintly stained with red on the side towards the sun; it has a longish stalk, and bears plentifully in large clusters; it has a very agreeable juice, and its flesh is tender; it ripens at the end of July, and beginning of August: and as this tree makes stiff healthy shoots, it will do extremely well in a standard, with proper cutting, admit it is propagated on a free stock; but the fruit does not ripen so
early

early as those against walls, or upon dwarfs, and if it be in both shapes in one ground, the fruit will be the longer in eating.

The Magdalen, or St. James's, takes its name from the time of its being ripe. It is a green pear, but turns rather yellow in ripening: 'tis of the smaller sort, but very good, being full of a rich juice; and will bear either in a standard or any other shape, and makes a very healthy tree.

The green Chisel is a middle-sized pear, somewhat longish, and rather sharp pointed towards the stalk; it always remains green, and is very full of juice, but I don't think it has so brisk a taste as some others: I never saw it bear on a standard, but it makes a healthy tree, and bears well against a wall, or in any kind of dwarf; and ripens in the beginning of August.

La Brute-bonne, or the brute pear, takes its name from the flesh near the core, being coarse and gritty; yet it has many perfections belonging to it, and may justly be ranked amongst the best sorts of summer pears, for the greatest part of its flesh is melting, and full of a vinous juice, which is perfumed, but not too highly.

'Tis of a pale green colour, and the side next the sun is faintly markt with red; it is much about the size of an autumn Bergamot, but not of so flat a make, and tho' it is a roundish pear, yet it is a little pointed at both ends, and has but a very short stalk. Part of them will be ripe about the middle of August, but 'tis best to gather them some time before, otherwise the greatest part of them will be destroyed by small birds, wasps, and flies. It will bear in any shape, and makes a strong healthy tree, if trained up for a standard; its leaves are longish, and of a dark green on the upper side, but their under sides are meally.

The Jargonelle, is a middle-sized pear, of a long shape, with a large eye or dew-bit; it is very small towards the stalk, which is long; its side next the sun is generally of a dark red or brown colour, but the other side, when ripe, is of a bright yellow. They begin to ripen about the middle or end of August, and are extremely good, being full of a very pleasant juice; but are liable to be destroyed by wasps, and flies, if they
are

are not gathered at their first beginning to turn yellow.

The tree makes long crooked shoots, that are subject to canker; for which reason I think 'tis the fittest for walls or dwarfs, and kept with proper cutting.

There are two Blanquet, or blanket pears, the great, and the small, but the latter I esteem the best; it is sometimes called the pearl pear; it ripens about the end of August, and is admirably good, being quite melting, and full of a rich juice. It is but a small pear, of a longish shape, and quite yellow; it bears its fruit in clusters, and in great plenty, but its shoots are very weak, and not proper for a standard-tree.

The summer Bergamy differs but little from that valuable and well known pear the Autumn Bergamy; the former has most of the perfections of the latter, but is of a green colour, and its time of ripening is earlier, being about the end of August; it is a healthy strong tree, and will bear upon a standard.

Of the rose pears there are two sorts both extremely good; the one is called the curled

rose pear, or the rose water pear, for its juice (of which it is very full) tastes like it, and if the tree be in good health, the flesh of the fruit is quite melting; it has a very short stalk, and bears in clusters, either on standards or otherwise; the leaves are large, round, and of a yellowish colour; the fruit has some small appearance of a purple colour on the side next the sun, but the other parts, when ripe, are of a pale yellow, and full of russet spots: it is a middle sized pear, more long than round, and thick at the end next the stalk, but not pointed; it is in eating at the end of August, and beginning of September.

The other rose pear has a long stalk, very small, and is of a flatter shape than the autumn Bergamot, and somewhat larger; 'tis of a dark brown colour on the side next the sun, but turns yellow on the other side when it becomes ripe: its flesh is not so tender as the other, but the juice is as rich, of which it is very full, and begins to ripen early in September. The birds, wasps, and flies, are very fond of this, as well as several others before mentioned;

tioned; for which reason, it ought to be gathered and kept out of their way. It is a weak shooting tree, and not proper for a standard.

There are two sorts of the orange Bergamies, both very much alike in shape and size; but the one is green, and the other is yellow, with a faint red on the side next the sun; it is sometimes called the royal orange Bergamy. I think it the best; tho' it has not so high a perfume as the other, yet 'tis as full of juice, and of a much brisker taste. The flesh of both are breaking, and their shapes are somewhat round, but hollow round the eye, and a little pointed at the stalk, which is short. They ripen in the beginning of September, and bear plentifully in any sort of dwarf, but don't make healthy standards, for their branches are subject to canker; they are about as big as the autumn Bergamy, and have an uneven surface.

The pear called the Robin, has many other names, viz. the August, Muscat, Averat, Hanville, Royal, or the French King's favourite pear. It ripens about the middle of September, and is of a roundish
make,

make, but narrow towards the stalk, and full at the eye; 'tis less than the orange Bergamy, but its flesh is breaking, like them, and its juice is very highly perfumed; it bears in large clusters, and in great plenty, either against a wall or on dwarfs, but I never saw it a standard, tho' I think it would bear with proper cutting, &c. for it makes strong healthy shoots.

The Salveati is a middle-sized pear, almost round, being much swelled in the middle, and but little pointed towards the stalk; is of a beautiful yellow colour on the under side, but that next the sun is somewhat red: its juice is extremely sweet, and the flesh tender. The wasps and flies are very fond of it. About the middle of September it generally ripens, but if it is gathered a little before, it will not eat worse for it. It bears well against a wall, or on any sort of dwarf, and also on a standard properly ordered.

The Cassolet, or green Muscat, so called from its colour and taste. It is but a small pear, of a long shape, but thickish at the end next the stalk; and tho' 'tis green, yet there are some specks in the skin like those
of

of golden pippens: it has a hard breaking flesh, but full of juice, which is very rich and perfumed. It ripens at the latter end of September, and makes a very healthy tree; it bears well on dwarfs, but I never saw it grow a standard.

The musked Bon chretien is a middle sized pear, of a yellow colour, with a large eye, somewhat round in its make, but narrow towards the stalk, which is long and small; it has a hard flesh, but the juice is very pleasant, and is in eating from the middle of September to the end: its leaves are very much like those of the winter Bon chretien, so are its shoots, but they are very subject to canker, and for that reason it is not proper for a standard: it is best against a wall, but does not require a south aspect, for either north-east or north-west will afford it sun enough.

The summer Bon chretien, or good christian, is a large pear of a fine yellow colour, and faintly covered with a dark red or brown on the side next the sun; it is of a very long make, and small next the stalk, which is of a great length, like the other Bon chretiens, as is also the core,

for 'tis the last part that decays, and for this quality of being found at the heart 'tis called the good christian. The flesh is tender and full of a rich juice: it holds in eating from the middle of September to the end. It bears well against a wall, admit the horizontals are placed a foot or more asunder: and their collateral shoots should be kept the whole length, for it bears sometimes upon those of the last year's production, especially when 'tis propagated on a quince stock; but care must be taken to keep the branches from cankering, by taking away the dead parts of the rind as soon as perceived,

La Poire de mon Dieu (as called by Monsieur Merlet) is a very large fruit (if the tree is in good order) of a yellow colour, and on the side next the sun of a beautiful red; the shape is somewhat long, and thick at the stalk, which is long, but not small; the flesh is tender and very full of a rich juice, which has something of a perfumed taste. They ripen upon the tree in September and October, and I have known them hold in eating for more than twenty days from one tree. The young
branches

branches are generally stiff, and of a dark red, or brown colour; they bear well either against a wall, or in dwarfs, but I have not seen them standards.

The Doyenne, or the deans pear, has many other names, (viz.) The white or short stalkt buree, the snow pear, the Michaelmas Pear, &c. it is of the largest sort, somewhat longish, but not pointed; the flesh is melting, and full of a pleasant juice; it ripens in October, and is as good a pear as any of that season.

The autumn Bergamot is a pear well known, so that it needs not to be described; and as it will bear either against a wall or on a standard, I should therefore chuse to have a tree or two of them planted both ways; by which means they will be in eating from the end of September to the middle of November; and it is so good a fruit, I think it can't be too long in season.

The red Buree has many other names, as the Amboise, and the Isambert, &c. it is a melting pear, and full of a very rich juice; and if the tree is in good order, the fruit is large, and long: they are ripe in October, and don't keep much longer; and

if the tree grows in soil too moist, the shoots are apt to canker. The horizontals should be at least a foot from each other; for the collaterals that bear are generally pretty long. This tree is much more proper for a wall than a standard.

The grey or brown Buree, or butter pear, is of different sizes, colours, and tastes, according to the different soils or aspects it grows in, which sometimes occasions it to have different names: but it is a contrary pear to either of the Burees mentioned before.

If the grey Buree be upon a free stock, in a moist soil, a northern aspect, and a wet summer, then the fruit will be of a pale green colour, without any red upon it, and but little brown; and tho' it may grow to a large size, yet the taste will be insipid: for which reason I think 'tis best to give this tree as much sun as possible, and then the fruit will be of a red colour next the sun, and the other parts will be brown but in ripening turns more yellow, and its melting pulp will be full of a very vinous juice; and when in perfection it is a large fruit, of a shape more long than round,

round, but not much pointed: 'tis in eating part of three months (viz,) October, November, and December; the wood of this tree is of a red colour, and if not kept in good order, is liable to canker. It will do either in espaliers or other dwarfs; but I don't think it proper for a standard.

There are two sorts of the Monsieur John, both alike in shape, but the one is brown, and the other more yellow, which is much the best, and is called the gilded or golden Monsieur John; it ripens in November, but the other not till January: they are both of a middle size, and round make, tho' pointed a little towards the stalk; their flesh is hard, and they have a hard core, but their juice is extremely sweet: the trees bear well, are healthy, and have round leaves.

The Crisan is a large pear, in shape somewhat like the autumn Bergamot, but much larger, with a very long stalk, and of a pale green or yellow colour, spotted with brown. Its flesh is quite melting, and full of vinous juice, much like that of the autumn Bergamot. It is in eating from the end of October to the middle of December.

The

The tree makes healthy shoots of a pale colour; it bears plentifully against a wall or dwarf, but I can't recommend it for a standard.

L'Epine d'Hiver, or winter thorn, is a middle-sized pear, of a long make, but not pointed, being thickish at the stalk which is long and small; it is of a green colour upon the tree, but turns yellow in ripening, in the months of November and December; its flesh is melting, and very full of juice which is highly perfumed; the tree bears well against a wall, but I have not seen it a standard.

The Swan's egg is but a middle-sized pear, in shape like an egg, and has but a short stalk; it is of a green colour, thinly covered with brown; its flesh is melting and full of a pleasant juice; and is ripe in November and December. The tree is healthy, and bears well either on a standard or any other way.

Le Bezy de Quessoy, or little winter Burree, is small russet pear, a little pointed towards the stalk; its flesh is melting, and full of as rich a juice as any pear in the season: it is in eating from the beginning
of

of December to the middle of January; the tree bears well on a standard, the fruit grows in clusters, and the young branches are sometimes a little thorny.

The St. Germain is a large long pear, pointed at the stalk, which is of a middle size: the colour of this fruit, when gathered, is green, with a little brown sometimes on the side next the sun, but turns yellow in ripening; its flesh is the greatest part of it melting, and full of a pleasant juice that is a little perfumed; it generally has a large core; and when the tree is not in good order, or too full of fruit, it will be small, and the flesh gritty, and of an insipid taste: they are in eating from the latter end of November till the middle of January. With proper order the tree makes plenty of shoots, and bears well against a wall, or on a dwarf, but I don't think the fruit so good on a standard.

I observe that when this tree is upon a free stock, it then requires a great space of wall; and if upon a quince, it ought to have its wood often renewed, for the fruit produced from old studs is apt to be small, and the flesh stony.

La Echasserie is a middle-sized pear, of an oval shape, with a long stalk, and bears in clusters; it is green upon the tree, and the side next the sun is a little brown, but it turns yellower in ripening, which is in December: the flesh is melting, and the juice well tasted, but it does not hold so long in eating as some others. This tree is not fit for a standard, neither is the fruit good against a north wall, but it generally bears plentifully, with proper order, either against a west, east, or south wall, and likewise on a dwarf or espalier.

The Ambrette is a small pear, of a round shape, and a dark brown colour on the side next the sun; but the other is more green, and changes yellow in ripening, which is in December and January: the flesh is quite melting, and full of sweet perfumed juice; the fruit grows in clusters and in great plenty, if the tree be in good order, either against a wall, or in any kind of dwarf, but it is not fit for a standard, because it makes but weak shoots: the leaves are long and narrow, and the wood is thorny.



The

The Marquis is a large pear, of a long make; some of them are pointed at the stalk, and some are not; it is of a green colour, with a little brown upon it; it ripens in December and January; its flesh is quite melting, and full of an extraordinary rich juice; I think it may be deemed the best pear of the season; it bears well any way, except on a standard, makes long shoots, and the young buds are large and of a black colour.

The Virgoleuse, or Virgolee, is a large pear, being both long and thick, without a narrow point at the stalk, which is thick likewise, but not very long: this pear, when growing, is of a dark green colour, and sometimes the side next the sun will be a little changed to a dark red, or brown colour, but in ripening turns yellow, and generally shrivels very much; the flesh is melting, but rather firmer than some others; its juice is in great plenty, and of the richest sort, admit the place on which the fruit has been laid has not spoiled it, for this fruit is apt to have a taste of what it is laid upon to ripen: it is fit for eating in part of December and January, and the beginning of

February; the tree grows vigorously, with leaves of a dark green, but is not fit for a standard, tho' it well deserves a wall that has a good aspect: it must be kept with good pruning; for if the bearing wood be too old, the fruit will crack and fall off.

The Colmar is a large green pear, thick at both ends; its flesh is tender, but not the most melting, though full of extremely rich juice: it is the best pear in the season for its long continuance in eating, which is all January, February, and part of March. I chuse to have it upon a free stock, on which the flesh will be tenderer than on a quince, but I don't like it for a standard: let it have a great space of wall, and then it will produce a large quantity of good fruit; and I think in every garden there ought to be more trees of this than any other sort, because there are none so good as it, in the same season.

The great Winter-rouffelet is a middle-sized pear, of a longish make, of a red colour next the sun, but green towards the wall, and turns yellow in ripening, which is in February and March; its juice is agreeable, but is not in such plenty as in

many others: the tree is healthy, the shoots are red, and the leaves are of a bright colour.

The-Martin feck is not one of the best pears; but as it is in eating when good ones are scarce, it is the more acceptable: it is a long fruit, of a middle size; the colour, when ripe, is yellow and a dark red; the flesh is of a firm nature, but its juice has an agreeable sweetness in it; it may be eaten in the months of February, March, and part of April, but it is much better when stewed or baked: the tree is healthy, and bears plentifully, tho' not fit for a standard.

The Easter Bergamot is a round pear, of a middle size and a green colour; the flesh is of the melting sort, and if it is so planted as to have much sun, then its juice is of the best sort; but when planted against a north wall, then its qualities are quite contrary: it is in eating in March and April, but I don't recommend this tree for a standard.

The Winter Bon Chretien is by some people divided into two or three sorts, viz. one called green, one yellow, and another

distinguished from them by its being of a different shape. I have had the opportunity of observing this fruit for more than thirty years, and really think there is but one kind; for I have observed the fruit of one tree to answer to the several descriptions given of all the pretended sorts; by which I think the difference of colours proceeds from some of the fruit being exposed to the sun, and others quite shaded from it; and the difference of size and shapes, from the different states of health the trees or branches are in which produce the fruit; or from the like causes it comes to pass, that the flesh and juices of the fruit are altered. I chuse to have them planted either upon a south, south-east, or south-west aspect, and the border of a proper soil; then, if the tree is in good order, the fruit will most of them be large, and of a bottle shape, and the side next the sun a dark red; the flesh tender, tho' not melting, and there will be a tolerable quantity of delicious juice in March, April, and a great part of May, which is the time of its perfection, when it will be changed to a yellow colour, and have an uneven surface.

This

This tree should have a large space of wall allowed it, and its horizontals laid at least a foot asunder. When this fruit grows upon a north aspect, and the tree too full of old mossy wood, and the studs and bearers at a great distance from the wall, then great part of the fruit will be small and green, and the flesh stony, with a small quantity of insipid juice.

The Chaumontel is of a large size, long, and small towards the stalk; the side next the sun is red, but when ripe, yellow; the flesh is of a melting sort, and the juice pleasant: it keeps rather longer than the Bon Chretien, makes a healthy tree with red shoots, is a good bearer, but neither proper for a standard nor north wall.

Good BAKING-PEARS proper for standards or north-walls.

The Bess d' Hery has a round shape and middle size, with a taste of fennel, when baked.

Parkinson's Warding is a long pear, of dark green, brown, and red colours, with

long narrow leaves of a deep but shining green colour.

The Black pear of Worcester is a large pear, pointed at the stalk, is of a dirty brown colour, and does best against a wall.

The Cadilliac is a very large pear, of a round make, with a green skin, except on the side next the sun, which is a little red.

The Bell, or Prince's pear, is very large, of a deep red colour, and shaped like a bell: it does best when supported by a wall.

The soil that I should recommend for these baking pears, is a deep black sand, or dry loam.

P L U M S.

The earliest plum that I know does not require much trouble in its cultivation, for it will bear plentifully on a standard, and is generally planted among flowering-trees, for the sake of its beautiful blossoms, which appear early in the spring: it is called the cherry plum, and indeed it somewhat resembles a cherry in its shape and size, as
also

also in colour, being red; its pulp parts from the stone, and the taste is not disagreeable; but I imagine would be improved by planting against a wall.

The Jean Hative plum, is a middle-sized fruit, of a yellow colour, covered with a white powder; it has the shape of an egg, and not flat; the flesh eats firm, and parts from the stone, which is long; its taste is tolerably good, if the tree be in health, and not suffered to bear too great a quantity. This plum ripens in the beginning or middle of July, and tho' it is not one of the best, yet I recommend it for its early ripening, and would advise to have it planted upon a north-east aspect.

The Precocce de Tours, is a large round plum of a violet colour, finely powdered; its pulp is yellow, and parts from the stone, and is full of a delicious juice; and it ripens at the end of July. This tree makes vigorous shoots, of a reddish colour, with a white down upon them; the leaves are round and of a dark green. It bears plentifully against a wall, or in an espalier; but I don't know how it would do in a standard.

The

The Italian damask is a middle-sized plum, of a roundish shape, and black colour, but finely covered with a blue powder; its pulp, which is yellow, is full of a rich juice, and parts from the stone; it ripens in the beginning of August; but I have not seen it bear on a standard.

Drap d'or, is also called the cloth of gold plum: it is of a yellow colour, and the side next the sun is spotted with dark red; it is a small plum, somewhat long in shape, but neither flat, nor pointed; it has a remarkable dimple on each end, and the stalk is short; the pulp is of a yellow colour, and does not easily part from the stone, but is extremely full of a vinous juice; it ripens about the middle of August, and bears plentifully against a wall, or on an espalier; but I am not acquainted with it in standards.

La Royale, or the royal plum, is a large round fruit, having but very little furrow or cleft on the side; it is of a dark red colour on the side next the sun, but pale on the other, and much powdered; it is full of an extraordinary pleasant juice; the flesh is firm, and of a pale yellow colour, and
comes

comes clean from the stone, which is longish and small for so large a plum. I deem it the best I know, for there are none of its size equal to it in goodness, and but few that are smaller excel it: when properly ripe, it will then shrivel on the side next the sun, and if it is preserved from wasps and flies, will dry upon the tree to be exceeding good at the end of August, or the beginning of September, if it is against a south wall, but on others it is later. I have seen young standard-trees of it, but I can't recommend the practice, for they are uncertain of bearing; and when they do, the fruit is neither large nor good, besides very liable to be beat down by the winds: but I have gathered good fruit from espaliers. The leaves of this tree are large, but not much pointed: it does not grow vigorously, and tho' it will make some long shoots, yet they are generally weak, and of but short duration; for which reason the horizontals ought to be often renewed: and as it blossoms early, I advise to have it covered with green branches as soon as the blossom begins to open. I have by that means procured a large crop of fruit, when
others

others of the same kind had but little, tho' both against the same aspect.

N. B. I knew a gentleman, who had a plum tree sent him by the name of the Matchless, which proved no other than the La Royale; and for ought I know they are both the same.

The Fotheringhay plum is a very large fruit of a red colour, and slightly powdered; it is shaped like an egg, with a deep cleft on the side; the flesh, which is white, parts freely from the stone, which is long; the juice has a sweet taste, but not agreeable to many palates, nevertheless 'tis a good plum to dry. It ripens at the end of August, and beginning of September; the tree is healthy, and bears plentifully; but I have observed the fruit bad, and drop from standards before it was full grown; for which reason I would advise those who like this fruit, to plant it either against a wall or in an espalier; but I don't think it deserves one of the best aspects.

The Orleans is a very common plum, yet I have known others taken for it, for which reason I think it can't be amiss to describe it. It is a middle sized round fruit,
some-

somewhat hollowed about the stalk, which is short; tis of a pale red colour, and powdered with blue, the pulp is of a pale yellow, or whitish colour; it eats firm, and leaves the stone dry; the juice has something of an acid taste; and it is deemed a good plum to dry.

It ripens at the same time as the La Royale; the tree makes vigorous shoots of a greenish colour, and the leaves are large: I have seen plenty of good fruit upon a standard that was kept with proper cutting; but when there is too large a quantity set, they should be thinned according to the rules laid down for wall-trees, or else the greatest part of them will be bad.

The blue Perdrigon is of a purple colour when full ripe, and strongly covered with a pale blue powder. It is but a small fruit, and a little pointed towards the stalk, which is short; it ripens in the beginning of September, and is an excellent fruit for its size. The pulp is of a pale yellow colour, parts freely from the stone, eats firm, and is full of a delicious juice, and when it dries upon the tree, has much the taste
of

of a good raisin. It makes a healthy tree, but not a good bearer without more than common care; for it blossoms early, and requires to be sheltered, if the weather is frosty; admit it be either against a wall or in an espalier, then it will do tolerably well, if the horizontals are often renewed; but I never saw it bear on a standard.

The white Perdrigon is in shape much like the former, but somewhat larger, and ripens also about the same time. It is of a pale yellow colour, but covered with a white powder; the pulp is of a pale green, full of a sweet juice, and leaves the stone dry, which is very small. Tho' this plum is not so good as the blue, yet it is a better bearer, and dries well, and is worthy of a wall, but I never saw it a standard.

Of the Queen mother plums, I know two sorts, the white, and the red; they are both alike in shape and size, that is, round, and small, with short stalks; and ripen at the beginning of September; the pulp of both is of a fine yellow colour, full of a pleasant juice, and adheres to the stone. The young branches are of a brown colour, and very smooth; the collaterals
 5 are

are very small, so are the leaves; but with proper order they will bear on standards. The first of these plums is of a pale red colour, and the other of a bright yellow, with a blush of red, and both thinly powdered.

The green Gauge is a plum much admired, and there is great reason for it, for many excellencies belong to it, and that particularly of its being a plentiful bearer. Most people imagine they know it; but as I have seen many deceived, I think it will be proper to describe it, as also those which cause the mistake.

It is a middle-sized fruit of a round shape, with a very small furrow on the side; the stalk is short and thick: 'Tis of an olive colour, and, when properly ripe, the side fully exposed to the sun is a fine purple covered thinly with a bleuish powder; the pulp is of a beautiful yellow colour, and full of an extraordinary pleasant juice, but does not come freely from the stone; it ripens in the end of August and beginning of September. The tree makes strong healthy shoots of a dark brown colour, without any powder

der upon them. The leaves are large, and of a bright green colour. I have seen it bear good fruit on a standard with proper cutting, and likewise in all other shapes.

N. B. A tree of this kind was sent from France, by the right honourable the Earl of Stair, to his Grace the second Duke of Rutland, by the name of the green Spanish plum.

There is a green plum taken for the green Gauge, which is not like it, if duly observed, except in part of its colour. I have heard it called the green ostridge; it is about the size of the green Gauge, but longer, and when full ripe more yellow, without any purple upon it, and its juice has quite an insipid taste; the pulp is yellow, and sticks close to the stone, and it ripens rather earlier than the green Gauge, but without any of its perfections; the size and shape of their leaves are nearly alike, so is their colour, but the young shoots are somewhat greener than those of the former.

The Maitre Claude is a middle sized plum, of a round shape, but rather narrow at the upper end, with a furrow on the side,

side, and a short stalk. Before it is fully ripe I have known it taken for the green Gauge; tho', if carefully observed, there is much difference in the leaves and shoots.

This tree makes shoots long and small, of a bluish colour, and covered with a white down; the leaves are of a dark green, and not so shining as the other. It is ripe in the beginning of September, and of a bright yellow colour; the side next the sun has some small marks of a bright red upon it, and is thinly covered all over with a white powder. The pulp is of a pale yellow, leaves the stone freely, and eats firm; the juice is pleasant, but not so plentiful as in some others. The tree bears plentifully against a wall, or in espaliers, but I have not seen it in any other shape.

The Verdock is sometimes taken for the green Gauge, tho' it is somewhat larger and longer, with a small furrow on the side; and about the middle of September, when it is generally full ripe, it is of an olive colour, with a little white powder upon it. The pulp is yellow, eats firm, sticks to the stone, and is full of a pleasant juice; its shoots are much the colour of those

A a

of

of the green Gauge, but not so strong, being longer jointed, neither does it make so healthy a tree, yet it bears well against a wall, &c. but I don't think it proper for a standard.

The Roche-Corbon is a middle sized plum, round in its make, and but little furrowed; is of a dark red next the sun, but the other side is pale, covered with a bluish powder: the stalk is long and small; the pulp is of a fine yellow, with plenty of pleasant juice, melts in the mouth, and parts from the stone which is long. It ripens gradually from the middle of September to the end, and bears plentifully against a wall, or in an espalier; but the fruit generally wants thinning, for if too many be suffered to grow upon a branch, they spoil one another.

The plum called the red Spanish damask, and sometimes the French damask, is a middle sized plum, of a round make, has a red colour well powdered, the stalk is short, the flesh is yellow and firm, and if not too full of fruit, has a very rich juice, and parts freely from the stone. It ripens against a wall in the latter end of September;

tember; but I have not seen it a standard.

The little green damask plum is almost round, but little powdered, has a green flesh when ripe, but does not freely quit the stone, and the juice is of a pleasant flavour. It is, for its colour, curious in sweet-meats; and bears well upon a standard, or otherwise, with proper cutting, &c. It ripens in the latter end of September.

The Mangeron is a middle-sized plum, of a round make, with a blackish colour strongly covered with a blue powder; the pulp is firm, and parts from the stone; and tho' it is not so full of juice as some others, yet it has a very pleasant flavour. It ripens towards the latter end of September, when planted against a wall; but I have not seen it any other way.

The red Imperial is a large plum, long and flat, with a furrow on the side; is of a pale red colour, covered with a white powder; the pulp is white, parts from the stone, and is better to dry than eat raw. It makes a very large healthy tree, and will bear plentifully against a north wall: I have not observed it planted any other way than

against a wall of some kind or other. It ripens at the latter end of September.

The Reine Claude is somewhat long, of a middle-size, a yellow colour thinly covered with a white powder, and the side next the sun is spotted with red; the pulp is firm, of a yellow colour, comes clean from the stone, and is full of a sweet juice of an agreeable taste. They ripen some in September, and some in October. I have not seen this kind any other way but against a wall, and there it bears plentifully.

The red and white magnum bonum plums are both very large in size, and shaped like an egg, a little furrowed on the side. They are neither of them very good to eat raw, but are both greatly esteemed for preserving; and I have known the white sort when full grown, but not ripe, made use of for mangoes. They generally ripen at the latter end of September; their leaves and shoots are very large; they bear well either against a wall or in an espalier; but their horizontals require to be at a greater distance from one another than those sorts that are smaller.

The

The St. Catherine is a middle-sized plum, somewhat long in its shape, and small towards the stalk, is of a yellow colour with a thin covering of white powder, and the side next the sun is faintly marked with red; the pulp is yellow, and full of a pleasant juice, but adheres to the stone. It ripens at the latter end of September and beginning of October. It bears well against a wall, and in a fine season I have known them dry upon the tree; but I can't venture to say that it will bear good fruit on a standard.

The St. Julian is a middle-sized plum, somewhat pointed at the stalk, is of a dark purple, or brown colour, and much powdered; the pulp does not open from the stone, tho' it is extremely well tasted, and dries well either by art or nature, if the season is good, in October, which is the time of its ripening. I have known it against a wall, but no other way; yet I think it would do in an espalier.

The Imperatrice, which in English is called the Empress plum, is of a roundish shape, and a middle size; and of a dark blue colour on the side next the sun, much covered with powder; the flesh is yellow,

358 A T R E A T I S E O F

and full of a pleasant tasted juice; it is ripe in October, and bears well against a wall, or in any kind of dwarf.

There are many other kinds of plums, that are very useful for preserving or baking; such as the red wheat-plum, and several sorts of damascenes; all of them bear very well on standards; and I have given directions for their management in treating of orchards. If a hole of only four feet wide be prepared for them at the time of planting, they will thrive very well afterwards upon any soil that is dry; admit it is six or eight inches deep before it comes to any kind of rock, stubborn clay, or loose gravel.

OF ORCHARDS.

S E C T. I.

Of the Situation, and Soils proper for
Orchards.

THE best situations for orchards are those upon an easy declivity towards the south, or south-east; or upon a level, well guarded from the south-west to the north-east points, with woods, hills, or buildings if possible, but for want of which elm hedges will be of service, or else Scotch firs at six feet apart.

The shape or figure I would choose to have inclosed for an orchard is the same as that for a kitchen garden, and its boundaries to have the same aspects. The same sort of soil mentioned for wall-trees, is also best for orchards; but since it is not to be met with in all places, therefore, where the soil is defective, it should be helpt with all necessary improvements that can be made at a moderate expence. There are few gentlemens seats, or even villages, where

the soil is so bad, but that it may be rendered fit for the purpose, by proper management.

However, the most improper ground for orchards, and the least capable of sufficient improvement, is such as lies so low that it can't be drained in the winter, but that the water will generally stand within a foot or less of the surface.

When a piece of land is fixt upon, for planting with fruit-trees, in the first place, if there is occasion, it must be drained by the methods laid down for draining gardens; and then manured, in places where the trees are to be planted, the same as directed for borders, according as the nature of the soil requires; tho' not exceeding the depth of a foot, for either apples, quinces, plums, mulberries, almonds, or filberds.

S E C T. II.

Of the Distances that Fruit-trees ought to be planted from each other.

THE ancient manner of planting orchard trees hath been generally at the distance of eighteen or twenty feet; but

but this is too near, for they require more room; for when trees are planted in this manner, the lower branches are smothered for want of sun and air, and their stems become naked much too high, nor will they ever produce good fruit upon their under branches; for being deprived of the benefit of the sun, by standing too near each other, the fruit is never well flavoured, and always will be smaller, and much worse, than when the trees stand thin; for in close places the sun's rays and the air has not free passage to take off the dew, which, by its hanging too long upon the fruit, becomes very prejudicial to it.

The lowest class of trees should be planted on the south and east sides, or on the south-east and south-west, if these be the sides of an orchard; for if the tallest kinds are planted in these places, they will injure the other trees, by depriving them of the benefit of the sun.

I should choose to plant the north-west, and north-east sides, or north and west sides, if the orchard so lies, with chefnuts, at twenty feet apart; for the nearer they are together, the sooner they make a shel-

ter

after that, the ground may be plowed, and sowed with turnips early in the summer, and eaten off with sheep in the autumn; which will make a greater improvement in the soil, than any other method will do, at the same expence.

But if the ground is intended for meadow, or to be pastured with cattle, then there is no occasion to pare more than a circle of about ten feet diameter, for each tree; and burn the turf upon the spot, as before directed.

If the soil is strong clay, then before the trees are planted, it must be often turned over, and well mixed with lime, coal-ashes, sea-sand, or its own soil burnt, in such proportion as directed for wall-trees, but not more than a foot deep; for, if the ground is prepared any deeper, the trees will settle with the light earth, till their roots be too much below the surface, and be thereby confined to the space of ten feet, which was prepared for them while young, but they are designed to extend their roots further when full grown.

If the soil is of a tender open nature, and free from gravel and stones for the
depth

FRUIT-TREES. 365

&c. must be mixed with the soil, as its texture requires, and in quantity proportionable for the space, as before prescribed, in this section, for each tree.

S E C T. IV.

Of Planting Standard-trees, and Pruning them at the same Time; with their proper Order the first Summer.

THE season for planting standards, and the method of cutting their roots, are the same as for wall-trees; but their heads are cut differently, both as to the time and manner of doing it, and may for conveniency's sake be cut before they are planted.

The shapes proper for their heads are represented by Plate VII. and the different figures shew the intended shapes of a tree at various ages.

Before removal, trees are generally furnished with more branches than are required after; and as their number of shoots are uncertain, I have not attempted to shew any thing of that sort in the

whose shoots are not more than two feet long.

The branches left on are all at their full length; that at A is intended for an addition to the stem, and should be one of the strongest of those standing upright; but the other four must be chosen as much in a horizontal position as their natural manner of growing will allow.

When a tree has but three horizontal branches, one of them must be cut near the bottom, yet so as to leave two plump buds; and if there are but two branches besides the stem, they must both be cut in the same manner.

The trees are to be planted, and their roots covered, as directed for wall-trees; but with a hill of earth quite round their stems, made flat at top, and of a greater compass than the extent of the roots; then let them be staid, so as to prevent the winds from loosening their roots, which may be done by fixing in the ground two stakes or piles, of about three inches square, and seven feet long, one on the north, and the other on the south-side of each tree, at the distance of a foot from the tree;

Oak wood is the best for this purpose, it being of the longest duration.

The earth about the roots of young trees should be kept constantly moist the first year after planting, from the beginning of March to the end of September; but the water should never be poured in great quantities near the stem, for that is subject to wash away the earth.

The best method is to make a little trench round the tree, at the distance of a foot, and pour the water into it; by this means the water will sooner reach the more remote parts of the root, where it is most wanted; and the ground round the tree for the space of ten feet, should also be kept clear of weeds, or any kind of vegetables.

All branches that put out from the stem must be rubbed off at their first appearance; and if suckers put up from the roots, they must be displaced likewise; or, if any strong and upright branch appears from any of the horizontals, it must be cut away, except the greatest part of the horizontal be dead which they proceed from, or either of the horizontals next to

B b it,

it, then a strong branch must be preserved to make good the deficiency.

S E C T. V.

Of Pruning a young Standard Apple-Tree, &c. till it comes to the Height intended.

I Have observed, that generally after orchards are planted, the benefit that might reasonably be expected from them is in some measure prevented, by neglect of cutting and dressing; which should be done at least every winter, as soon as the trees have shed their leaves; and therefore will here give proper directions for managing all kinds of orchard-trees; and first of apples, this sort of fruit being the most common in orchards, and of the greatest use for baking, stewing, &c. as also for making cyder.

In order to make a tree healthy and bear good fruit, it must be kept thin of wood, and equally so in all parts of the head, as near as possible; for, by this means, it will receive the most benefit from the sun.

Fig.

Fig. 4. represents a tree when full-grown; and the way to bring a tree to such a shape, is to make a strait stem, and preserve upon it four branches at every place, where a new set of horizontals is required, as at A B C D, which should not be nearer each other than two feet; and if the tree is of such a nature as to produce a strait upright branch for a stem, then all others but those designed for horizontals, must be rubbed off at their first appearance; for all branches of a standard fruit-tree should grow in such positions as those of a silver-fir.

But if it is of a free growth, and the branches are more subject to grow declining than horizontal, the young shoots should be all left upon the new part of the stem the first summer; for, if part are taken off, the others will grow still more crooked.

The way to obtain a strait stem in the latter sort of trees, is to fix a strong pole in the ground, and tie it in several places with lifts of cloth to the upright part of the tree, and by the side of the pole confine the center branch, till it reaches the

B b 2

height

then great part of the studs ought to be cut off in the winter.

When a tree does not want vigour, let all the branches continue till winter, then cut off all those above six inches long, growing upright from the upper-sides of the horizontals; and this should be observed in trees of all ages, for no upright branches from those parts should be suffered to grow longer.

The branches of some kinds of apple-trees are subject to grow too much declining; but when this is the case, they must be sustained in a right position by proper supporters, as was directed for those branches that were too much upright; and all branches designed for horizontals, be they either seconds, thirds or fourths, as A B C D, in Fig. 7. they must all be so confined after they are two feet long, and whenever the extreme part of a horizontal becomes weak, the strongest shoot near it must be preserved for its place.

If in any kind of tree, after the branches are laid horizontally, they don't grow much in length, but put out strongly near the stem in an upright position, then
such

In such manner a tree should be confined, till the branches are strong enough to support themselves in a proper position; and when the four first horizontals, I mean those nearest the ground, are become each a yard long, they should every one have two branches preserved, and trained, in the same manner as those of the dwarf-tree, represented by Fig. 6. marked A A, and when these last come to the length of a yard, others must be suffered to grow from them in like manner as from the first; and as all the horizontals increase in length, so they should also in number, by the rules given for the lowest, as represented by Fig. 7. and never suffered to cross each other.

If the horizontals do not increase fast enough in length, then all the upright shoots proceeding from them must be taken off at their first appearance, and the longest of those shoots near the ends, except that branch designed for the lengthening of the horizontal, for it must remain in its natural way of growing till it is two feet long; and if a tree either bears or blossoms plentifully, without shooting much,

B b 3 then

S E C T. VI.

General Rules for Pruning and Dressing
Apple-Trees, of all Ages, that have been
regularly trained.

ALL dead branches or studs must be cut off close to the part they proceed from, and the parts cut should be made very smooth, that the wound may sooner heal, and where large branches are taken off with a saw, the parts thus cut should be pared with a sharp chissel in such a manner as that the wet may descend from them; for when they are left either horizontally, or with an uneven surface, the wet will continue upon them, till it penetrates into the wood and decays the whole tree.

The branches should not be suffered to cross one another, nor touch at their extremities.

The moss should be clean scraped off in the winter, and where there is any cankered rind, it must be cut away to the quick, and all old bark should be clean
pared

pared off, for it harbours insects, as also do the dead leaves that hang upon the trees, wherein the eggs of caterpillars are often concealed, and should therefore be taken off and burnt.

Where new horizontals are wanted, young shoots suitable for that purpose should be left, and confined with bandage to their proper places; but if there are no young shoots, then cut out a piece of wood with a chissel, where one is required to grow.

Fruit is generally small upon old studs that have born a long time, which should therefore be taken off, as also some of the shortest horizontals, and young ones preserved to be in their stead; by which means, large fruit may be produced upon old trees.

The common way of applying manure to the roots of trees, is to do it close to the stem; which is but of little service; for the most useful roots of large trees are at a considerable distance; and the best method of manuring orchards, is to strew all over upon the surface of the ground the quantity of a bushel of soot for every large tree, and
so

so in proportion for those of a smaller kind, as soon as they have had their winter order of cutting and dressing.

It is also necessary to keep orchards clear from the roots of nettles, burdocks, mallows, or any strong growing weeds; for they deprive the trees of a great deal of moisture.

S E C T. VII.

Of Pruning of Orchard Pear-Trees.

SUCH pear-trees as are proper for standards are mentioned in the catalogue given of this kind of fruit, and what hath been said in regard to the management of apples, must be observed also for pears; for their nature of growing and bearing is nearly the same, whereby there is no occasion of different methods of pruning; but the sorts that are naturally of a vigorous growth may be suffered to grow twenty feet high.

S E C T.

S E C T. VIII.

Of the Ordering of Chesnuts in Orchards.

THE chesnut being commonly planted more for shade and the sake of its timber, than for the value of the fruit, (for they don't always ripen in this climate) should for that reason have a strait stem, of as great a length as can possibly be procured, and branches left on it at the same distance as directed for the horizontals of apple-trees; but there is no occasion to confine them to any particular order, for they may be suffered to grow according as they are naturally inclined, without any restraint; and where the timber is more valued than the shade, the stems may be dressed to a greater height before any strong branches are suffered to grow upon them.

S E C T. IX.

Of the Ordering of the Walnut-Tree.

THE walnut is a tree valuable both for its fruit and timber, and the more knotty it is, the more beautiful; so
that

wife the mulberry is much better to have its branches near the ground, for then the fruit is gathered with more ease, and less liable to be blown down by the winds.

The mulberry should have horizontals drawn from the stem, in the same manner as the apple, and all dead wood and old branches must be taken out, and new ones raised where there is occasion; but such branches as are designed to produce bearers must never be shortened, for they bear their fruit upon branches of the same year's growth, proceeding from three or four buds near the extremities of the last year's shoots; and should the ends of these shoots, together with the buds be taken off, they would not produce any fruit, though they would shoot very strongly from other buds.

S E C T. XI.

Of the Pruning of Standard-Cherries, Plums, Almonds, Quinces, Medlars, and Filberds.

Standard-cherries should be treated in a manner somewhat different from apples, for they bear their fruit upon younger wood,

out of the reach of cattle, and all the dead ones taken out in the winter.

S E C T. XII.

Of young bearing Standard-Apples, that were planted too near each other.

THERE are some young standard apple-trees that were planted no more than eighteen feet apart, and at the same time had all their branches shorten'd, and none taken out, yet bear very well.

But this method of cutting and planting is of ill consequence to the trees when they grow large, for then they deprive each other of the benefit of the sun and air; and the branches likewise of one tree injure the branches of another tree the same way.

But if the trees are moveable ones and of good kinds, these grievances are easily to be helped, by transplanting such of them to distant places as incommode or crowd the orchard, and those that are but ordinary sorts may be burnt; and both those that are designed to remain, and those that are
to

to be transplanted should have the
 ches thinned in the winter, but not
 ed; and such healthy ones must b
 to remain, as will the earliest repr
 several figures in Plate VII. that
 signed for the shapcs of a standar
 different ages.

There should be one of the 1
 and most upright branches chofer
 the upper part of the stem, if th
 sufficient number of horizontal
 growing from it, at or near such
 they are required, that is, each
 about two feet above each other
 each place four; but, if they are
 horizontal position, they may b
 by a proper bandage.

But if the strongest and most
 branch be not so well furnished
 purpose, as another which is less
 then the former must be taken
 the latter confined by bandage to
 as much upright as may be, by
 given for those newly planted.

Immediately after their leaves
 is the properest time for thinning
 ches, and every part of a tree mu

mined; and, by cutting out some, and tying others to poles, the tree must be brought as near as possible to the intended shape, and if in some places there is too great a vacancy betwixt the horizontals, and in other places too little space between each other, they must be brought to more equal distances; if they be too strong to bend in their whole substance, they may be cut half through, and then tied to poles that are properly fixed, to support them in such positions as they are desired to grow in.

Observe, that the parts cut must be left with a very smooth surface, to prevent the wet entering in, which would cause the tree to decay: a hand-saw is a ready instrument to cut off large branches, but it leaves a roughness, which should be taken off with a sharp chissel.

Before the saw is used, there should be a large cut made on the under side of the limb intended to be taken off, to prevent the bark being tore from the stem, when the weight of a branch causes it to break off before the saw is quite through.

The branches that are taken off must be cut close to the stem or horizontal which

C c

they

and in such a form that the cuts shall be flat upon the ground, when the tree is planted upright.

Apple-trees are not so subject to have a tap-root as pears are; but whenever one of them is met with, I would not advise to have them left much more than a foot long; and after the tree is raised right up, as it stood before in the hole, let there be good earth put quite round it, so as to fill up the trench level with that upon the roots; then let the tree remain there a year; but if the summer proves dry, give water to the roots, and likewise rub off all young branches that may possibly put out near those places where others were cut off, or from any other parts of the tree where they are deemed useless.

In the summer after the trees have been cut, it will be very proper to prepare the places where they are to be planted, in such a manner as was directed for young orchard-trees; but these having large roots, the holes must be made deeper than those for smaller trees, and the longer they are made before the time of planting, the better order will the earth be in. The seasons for removing trees have been

appointed before, and it is proper for those of any size, but large ones require the more persons to assist, because of their weight; but the roots being all cut through before, makes the digging part easy the second time.

When the weather is not frosty, the trench must be opened as before, but great care must be taken to preserve the young roots that are made from the ends of those that were cut the last year; and if the weight of the tree with the earth upon the roots be more than can be carried upon leavers, by as many men as can conveniently walk one before another; then the tree must be taken up with a fern, and placed right upon its roots, either on a sledge, or a carriage with wheels about a foot high, and drawn by horses to the place prepared for its reception.

Care must be taken, in the time of removal, to keep the roots from being dried, or damaged by frost; and before the root is put into the hole, let the depth of both be measured, lest the tree should be taken up again for want of being placed at a proper depth.

I would have about six inches deep of fresh earth under the roots, which will settle
in

in a few years; and for that reason the uppermost roots should be placed at the time of planting even with the surface of the ground, and then the trench must be filled up with earth round them, and gently trod till all the roots are covered over about six inches.

The basin of earth round them should be about eight feet wide, and near a foot lower at the center than on the sides, and covered with such manure after as is ordered for wall-trees; and let them have water, when the weather is dry, and likewise tied so to stakes as to prevent their roots being moved by the winds; then there will be no fear of good success.

After their removal, their branches must be ordered as those that are grown to the same height, tho' planted young, according to the rules laid down for that purpose.

S E C T. XIV.

Of Standard Apple-Trees that don't bear much good Fruit.

BArrenness in apple-trees, or the want of good fruit, proceeds from different causes; many of which may be removed,

roots, that is, about a foot broader than what they extend, and confine the tops to such stakes as its size requires.

If the soil be too wet, and there is a descent to any side, let there be drains made to it (betwixt each row of trees) about half a yard deep, and lay faggots in the bottom, about a foot thick; then place the sods over them, with the grass uppermost, and the remainder of the earth may be spread over the other grass ground. If a tree be covered with moss, and blossoms plentifully; without making much length of shoots, but does not bear much, or the fruit but small, without being shaded by others, then there is a necessity of thinning the branches, and scraping off the moss, the same as though the tree was to be removed.

Sometimes a tree that is planted too deep, in good soil, will shoot strongly, but not blossom much; if it be not large, raise it higher; or take off the soil, till the upper roots are covered no more than an inch thick with earth.

If a tree shoots vigorously, and is planted of a proper depth, and at more than thirty feet distance from any other, the

I N D E X.

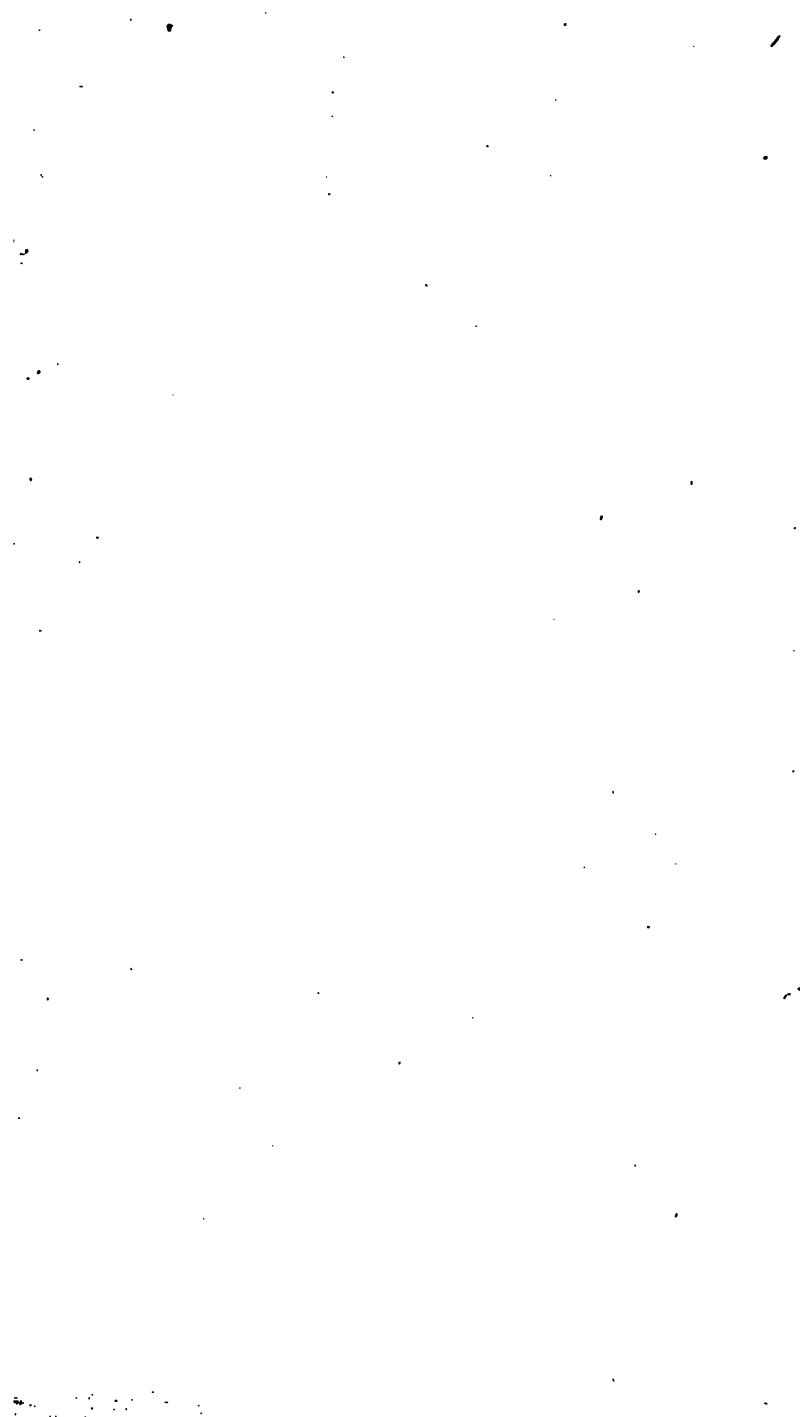
A LMONDS, how raised	Page 49
their shapes	59
how to prune and nail them	179
in espaliers	227
Ants, how to destroy them	281
Apples, stocks proper for them	51
their shapes in the nursery	61
pruning them against a wall	150
in espaliers	222
in dwarfs	225
their kinds	293
Apricots, stocks proper for them	48
their shapes in the nursery	59
pruning them	179
in espaliers	227
their kinds	295
Barberries	247
Blossoms preserved from frosts	262
Borders, how to make them	6
how to keep them	252
how to improve old ones	255
Burning of clay	12
Bad Gardener, a loss to gentlemen	139
Blossoms of grapes to preserve	208
of Apricots, &c.	262
Cata-	

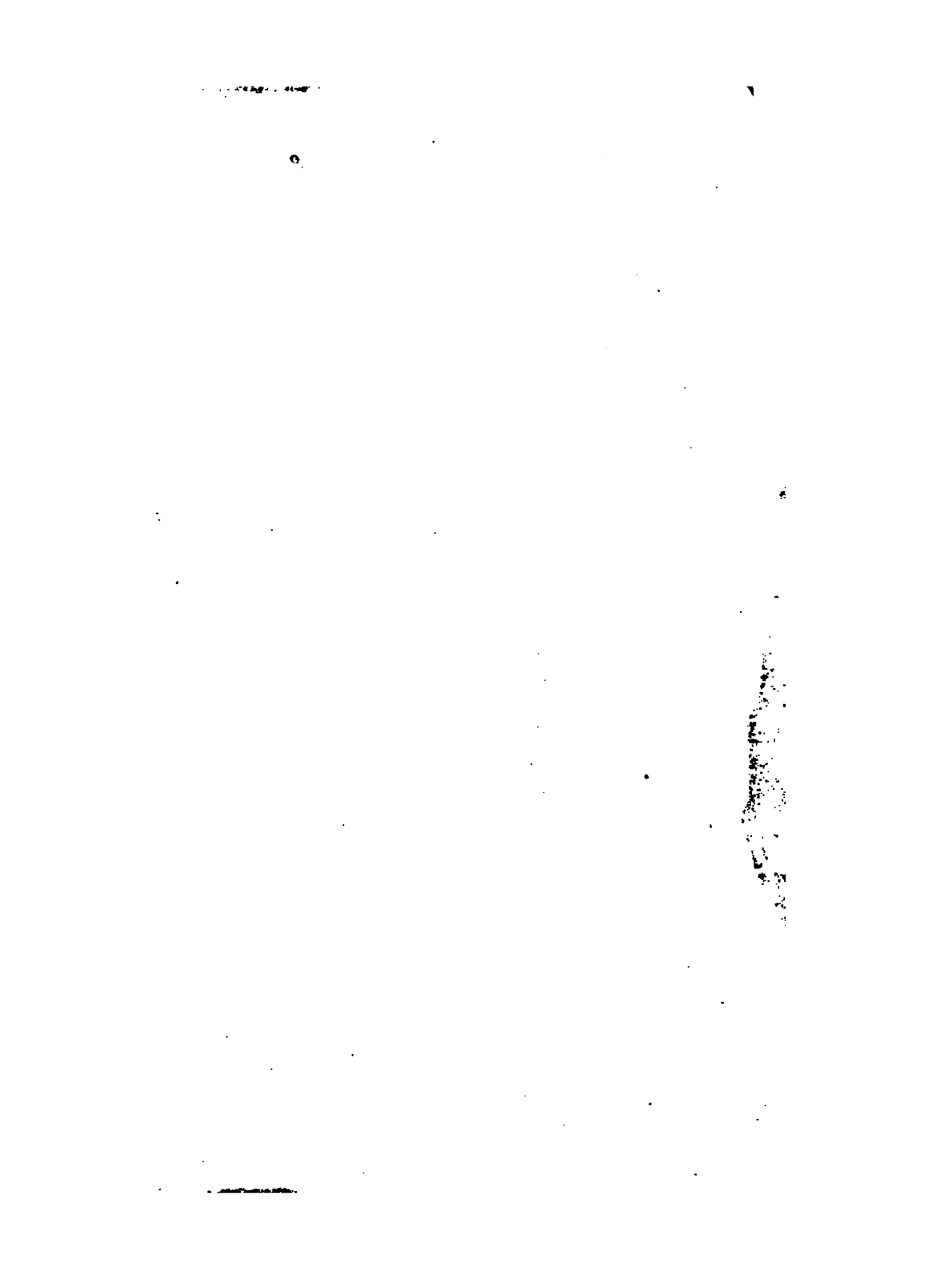
I N D E X:

Fruits thinning	183
gathering	284
how to preserve them for winter	292
Frosts, detrimental to fruits	262
Gooseberries	241
Grapes, their kinds	305
Head of trees cutting at the time of planting	77
Honey-dews upon trees, and its ill effects prevented	272
Instruments proper to dress trees with	99
Medlars in the nursery	56
their kinds	311
Mulberries, their shapes in the nursery	63
pruning them against a wall	148
pruning in espaliers	223
their kinds	311
standards	380
Nailing a new planted tree with three branches,	
either a pear, plum or cherry	101
the first summer	108
the second winter	111
a new planted tree with one or two branches	119
on peaches, nectarines, &c. the first year of planting	86
a full grown tree	128
Nectarines, their kinds	312
Observations on the different ways of pruning pears, plums, &c.	86
Orchards	

I N D E X.

Vines planting	186
pruning of all ages	189
in espaliers	228
standards	238
their kinds	305
Wet soils improved	3
Walls building	35
Wall-trees, their shapes required in the nursery	57
Wasps and flies how to destroy them	281
Winter-fruits, how to preserve them	287
Walnuts pruning	381





1. The first part of the document is a header section containing the following information:

2. The second part of the document is a list of items, each preceded by a number and a letter:

3. The third part of the document is a list of items, each preceded by a number and a letter:

4. The fourth part of the document is a list of items, each preceded by a number and a letter:

5. The fifth part of the document is a list of items, each preceded by a number and a letter:

6. The sixth part of the document is a list of items, each preceded by a number and a letter:

7. The seventh part of the document is a list of items, each preceded by a number and a letter:

8. The eighth part of the document is a list of items, each preceded by a number and a letter:

9. The ninth part of the document is a list of items, each preceded by a number and a letter:

10. The tenth part of the document is a list of items, each preceded by a number and a letter:

11. The eleventh part of the document is a list of items, each preceded by a number and a letter:

12. The twelfth part of the document is a list of items, each preceded by a number and a letter:

13. The thirteenth part of the document is a list of items, each preceded by a number and a letter:

14. The fourteenth part of the document is a list of items, each preceded by a number and a letter:

15. The fifteenth part of the document is a list of items, each preceded by a number and a letter:

16. The sixteenth part of the document is a list of items, each preceded by a number and a letter:

17. The seventeenth part of the document is a list of items, each preceded by a number and a letter:

18. The eighteenth part of the document is a list of items, each preceded by a number and a letter:

19. The nineteenth part of the document is a list of items, each preceded by a number and a letter:

20. The twentieth part of the document is a list of items, each preceded by a number and a letter:

21. The twenty-first part of the document is a list of items, each preceded by a number and a letter:

22. The twenty-second part of the document is a list of items, each preceded by a number and a letter:

23. The twenty-third part of the document is a list of items, each preceded by a number and a letter: